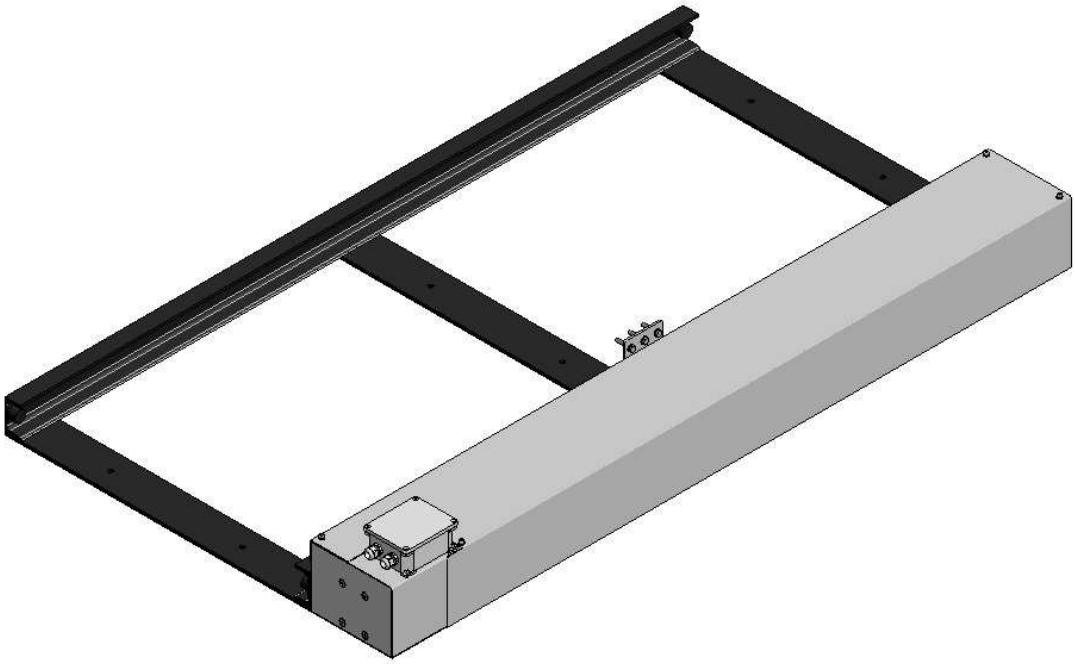
Z-axis
HBF

Customer Product Manual 7179832_01
Released 07/2013

Nordson Deutschland GmbH – Erkrath - Germany



NOTE: descriptions and illustrations in this publication are simplified.

For eventual technical reasons ***Nordson*** reserves the right to modify their product data or features without any prior notice.

CE

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

CUSTOMER :	JOB ORDER NO.:
SERIAL NO	DATE:

ISSIE NO.	**DATE**	**DESCRIPTION**

Prepared	Controlled	Approved	Nordson

CONTENTS

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.

0.2 Object of the document

The 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 12100-1:2010, Safety of machinery – General principles for design – Risk assessment and risk reduction
- UNI EN ISO 13849-1:2008, Safety of machinery – Safety-related parts of control systems - Part 1: General principles for design
- UNI EN ISO 13857:2008, Safety of machinery – Safety distances to prevent hazard zones being reached by upper and lower limbs
- UNI EN 349:2008, Safety of machinery – Minimum gaps to avoid crushing of parts of the human body
- UNI EN ISO 13850:2008, Safety of machinery – Emergency stop - Principles for design
- CEI EN 60204-1, Safety of machinery – Electrical equipment of machines

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**
- **Operating 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 supplied by:

NORDSON CORPORATION

0.5 Nordson International

	COUNTRY		PHONE	FAX
Europe	**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		45-43-66 0123	45-43-64 1101
	Finland		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
	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*	44-1296-610-140	44-1296-610-175
		Finishing	44-161-498-1500	44-161-498-1501
		EFD	44-1582-666-334	44-1582-664-227
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**		1-440-985-4000	1-440-985-1096
Japan	**Japan**		81-3-5762-2700	81-3-5762 2701
North America	**Canada**		1-905-475-6730	1-905-475-8821
	USA	*Finishing*	1-440-892-1580	1-440-985-1417

0.6 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.

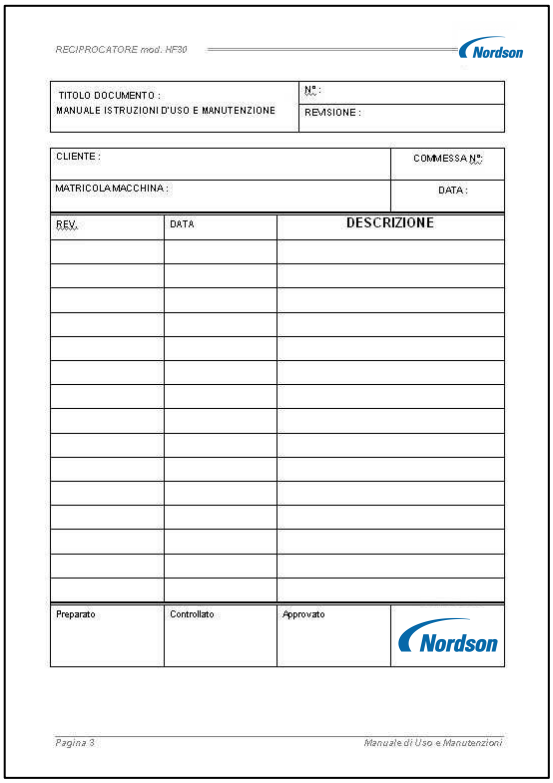
Electrical maintenance person: a technician qualified and authorized to install, repair and carry out special maintenance exclusively electrical.

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**".



RECIPROCATORE mod. HF30

TITOLO DOCUMENTO : MANUALE ISTRUZIONI D'USO E MANUTENZIONE	N°. : REVISIONE :

CLIENTE :	COMMESSA N°:
MATRICOLA MACCHINA :	DATA :

REV.	DATA	DESCRIZIONE

Preparato	Controllato	Approvato	
			Nordson

Pagina 3 Manuale di Uso e Manutenzioni

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 at pages 9 and 10):

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;
- unauthorized modifications to the machine;
- the use of spare parts not supplied or approved by ***Nordson***
- failure to follow the "operating and maintenance manual";

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

1.0 TECHNICAL ASSISTANCE

For any technical or commercial requirements, please contact the relevant ***Nordson*** office from the list on page 9/10 in this manual.

2.0 GENERAL SAFETY INSTRUCTIONS

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 understanding 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.

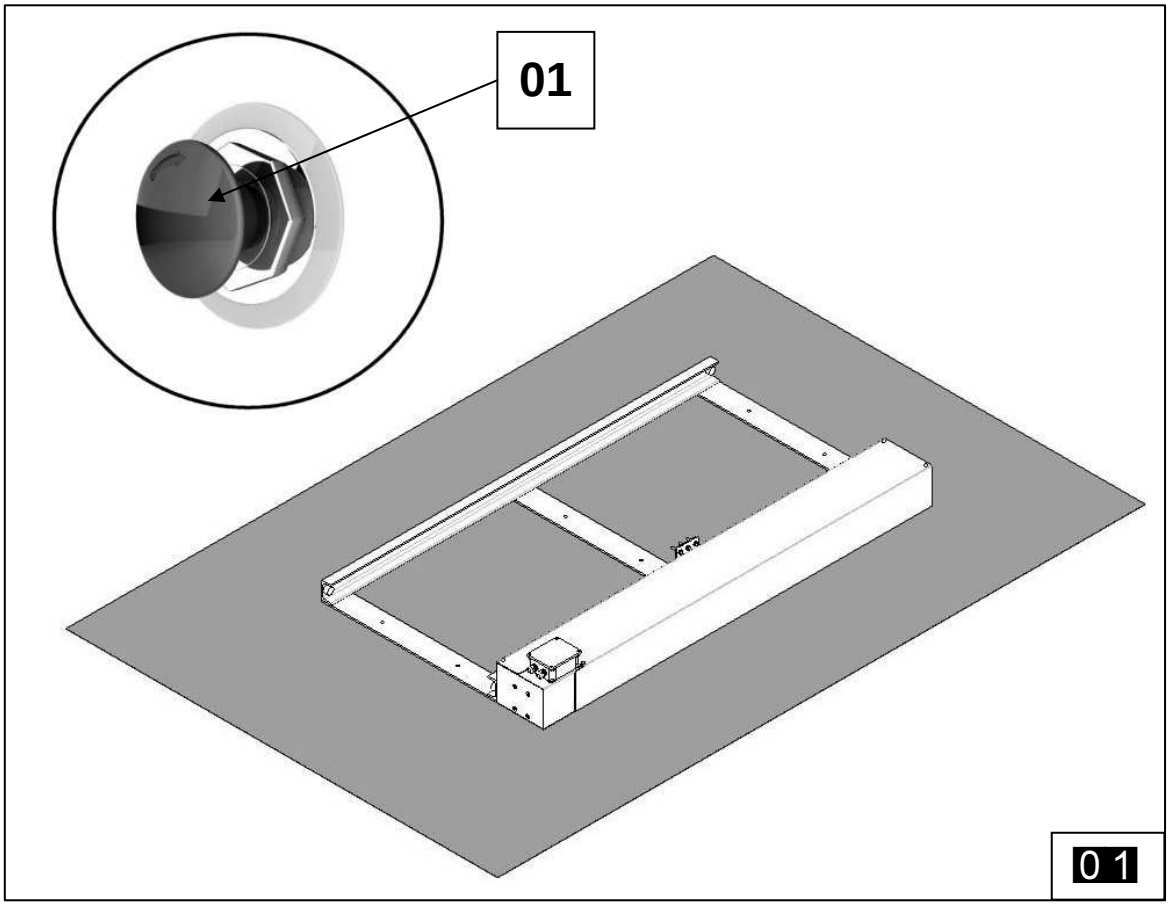
ATTENTION: Before starting up the machine and carrying out working operations, electric boards, control panels, and all protections, must be closed and the working area must be free and clean.

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 01A where the operator must not enter when the plant is in function.

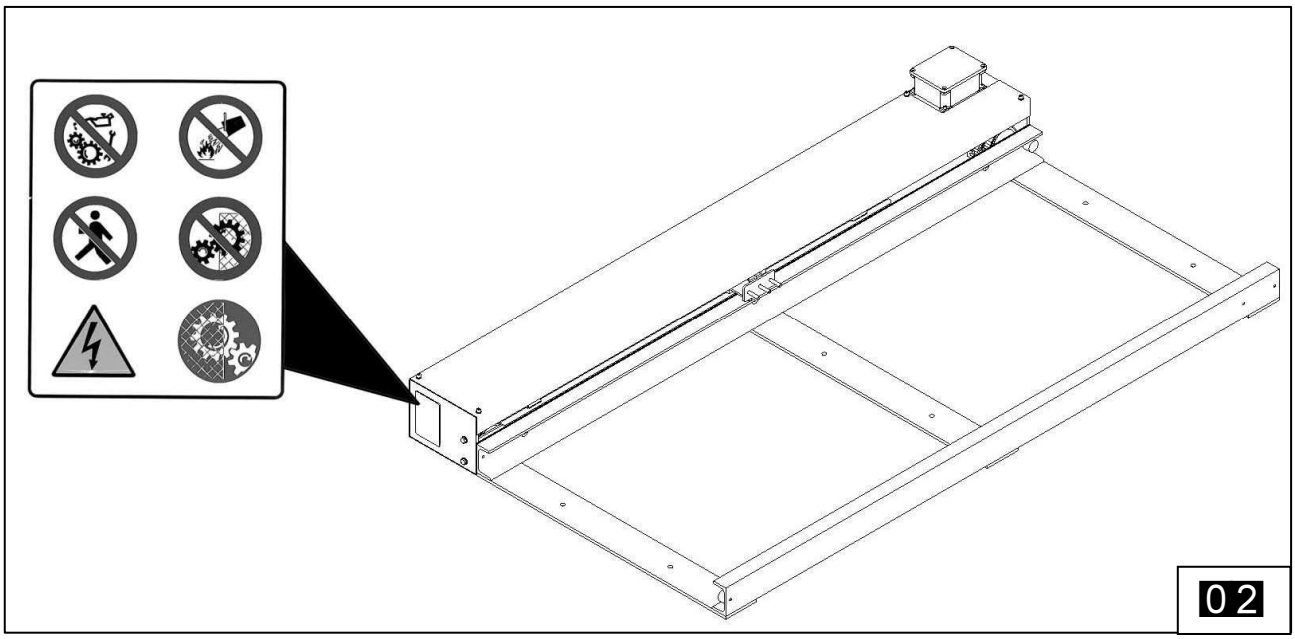
- The position of the emergency/stop button 01**(01)** depends on the type of control module connected to the machine and it must be integrated in the circuit of the plant (see wiring diagrams).



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.



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.

3.0 DESCRIPTION OF THE MACHINE

In many painting automating plants, it is necessary to move guns on more than one axe. On this subject ***Nordson*** has studied and realised the **Z-axis mod. HBF**, to satisfy the requirements of a horizontal movement, besides the vertical one.

The **Z-axis mod. HBF** is constituted by: the **Manual translator system HBFA** and the **Translation motorized system HBFM**; on the grounds of the necessities, these two units can be supplied separately. This machine can move, using simple manual controls or programmable systems, loads to 300 kg.

The **Z-axis mod. HBF** can achieve a parallel or a perpendicular movement to the axe and can be combined only with the **Reciprocator mod. HF**.
Many other uses are also possible besides painting but they have to be considered by ***Nordson*** technical office.

Description

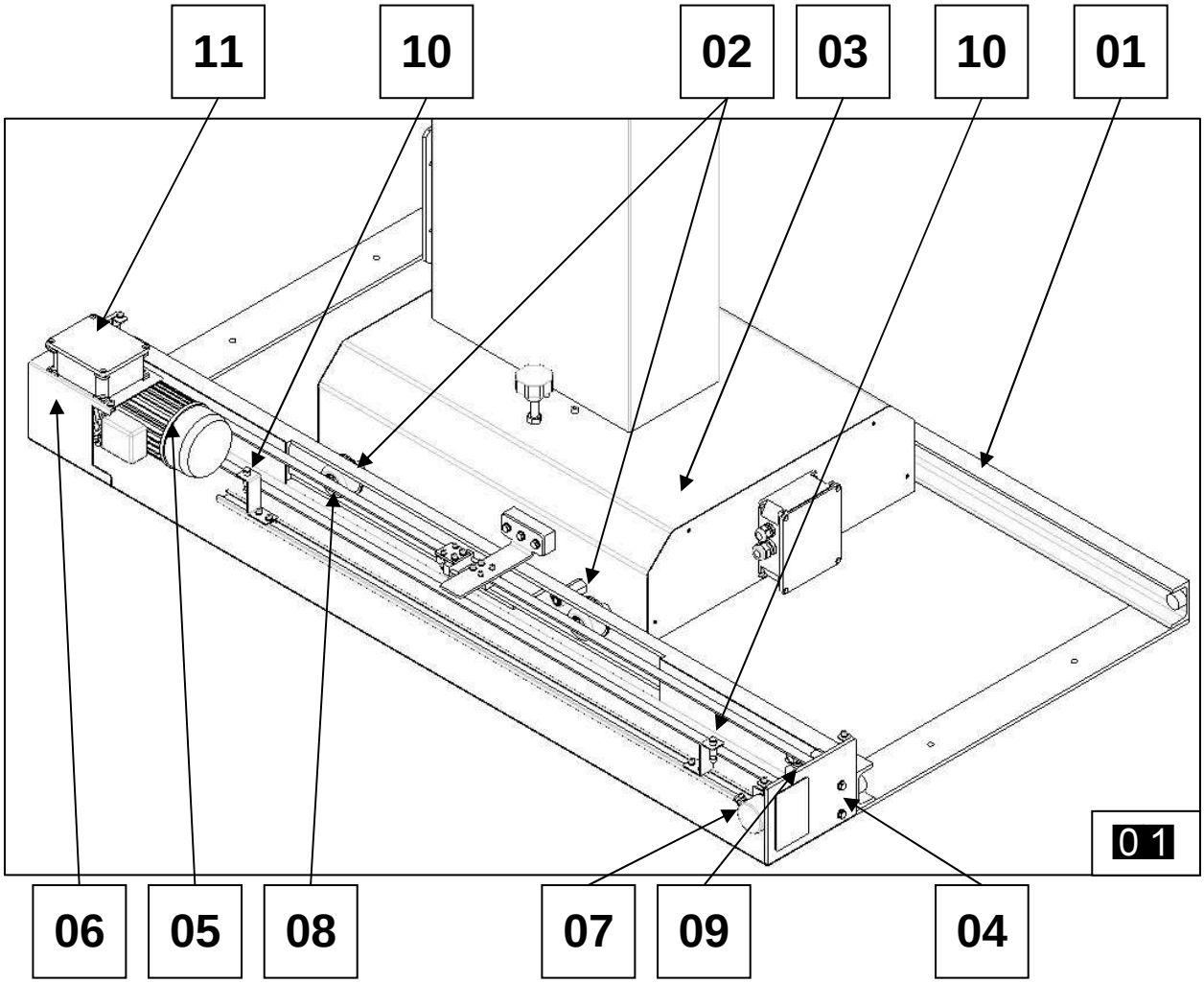
The **Z-axis mod. HBF** is a rugged steel structure with two "C" lateral tracks 0 1**(01)**, where the shaped wheels 0 1**(02)** of the movable part 0 1**(03)** slide.
This group is called **Manual translation system HBFA**.
On one side, the **Translation motorized system HBFM** is fixed: it is constituted by a covered part 0 1**(04)**, with a steel cover, which contains the gearmotor 0 1**(05)** with the driving pulley 0 1**(06)** the encoder (if provided) 0 1**(07)** and the toothed belt 0 1**(08)** which transmits the movement to the basement and the snub pulley 0 1**(09)**.

The trolley of the z-axis is composed by the Kit wheels attached to the basement of the reciprocator mod. HF.

The maximum stroke is determined by a couple of limit switch sensors 0 1**(10)**, assembled at the extremity of a guide, parallel to the toothed belt.

The machine is not endowed with anti-vibrating feet, but it is based directly on the ground through screws anchor and relative screws.

At the side of the covered part, where there is the gearmotor, the connector outlets 0 1**(11)** (power supply and signal) to the control module are located.

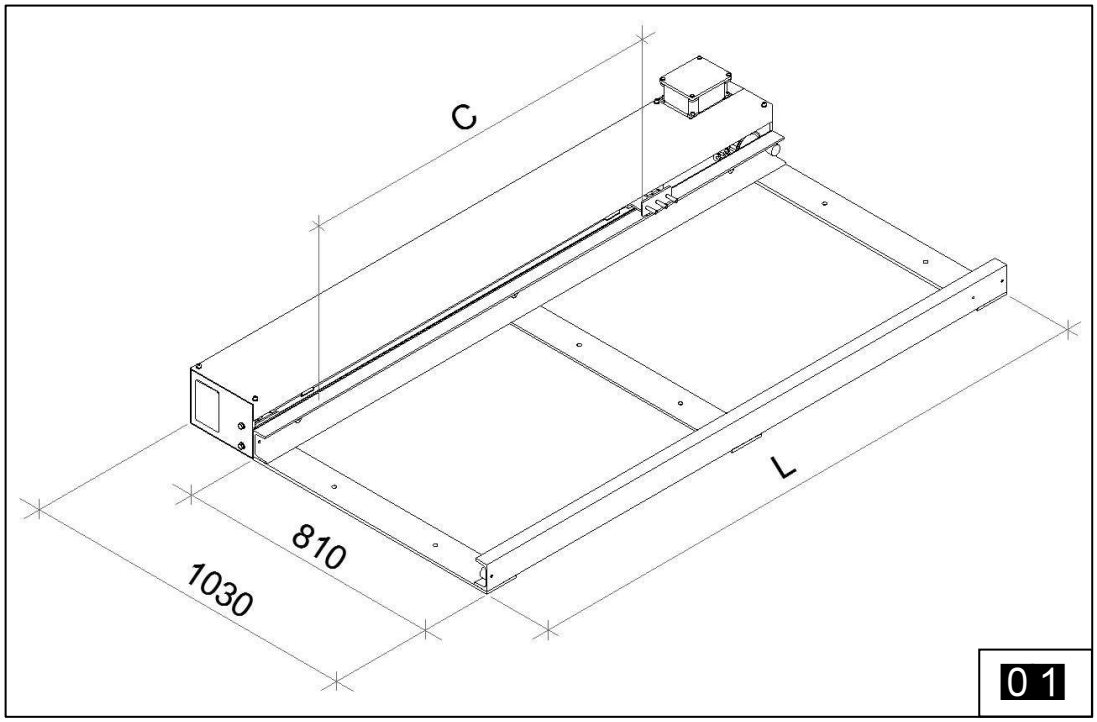


3.1 Terminology used

- **ARM:** part of the reciprocator for fitting the spray gun.
- **GUN:** apparatus not supplied by ***Nordson*** suitable for the spraying of epoxidic powders or paints.

4.0 TECHNICAL DATA

4.1 Weights and overall dimensions



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

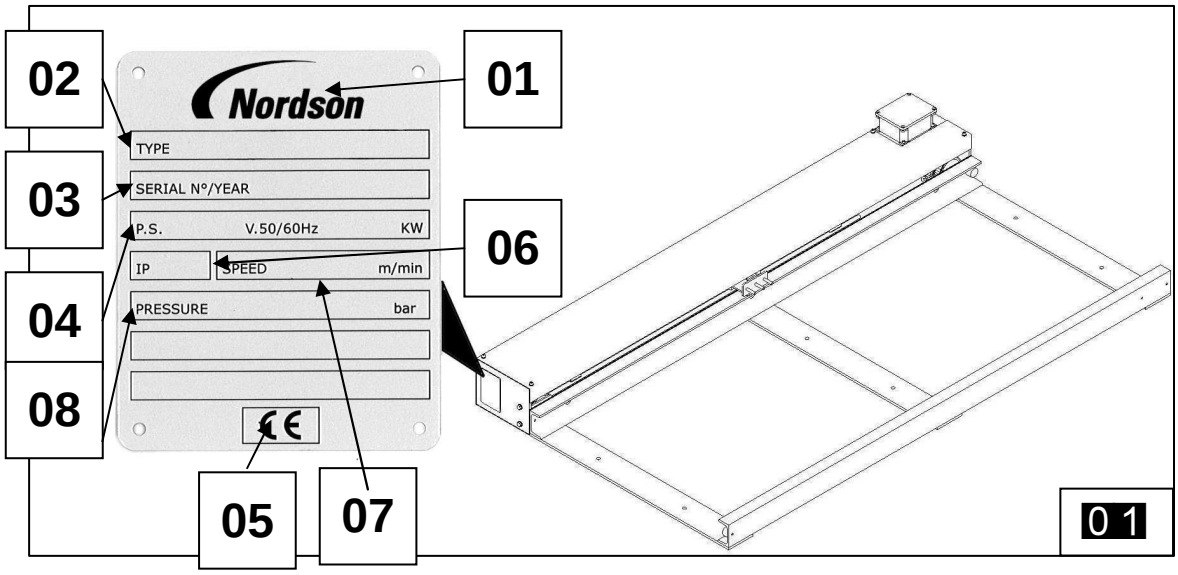
STANDARD VERSION	HBF
TOTAL LENGTH "L"	C + 800 mm
USEFUL STROKE "C"	On demand; min 500 mm
SPEED	5 m/min
CAPACITY	300 Kg
NOISE	< 70 dB
RATED POWER	0,5 Kw
POWER SUPPLY	230 VAC +/- 10% 3F 50 Hz

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/Address
- 01**(02)** Type
- 01**(03)** Serial number. 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 number 01 **(03)** on the plate must be mentioned whenever contacting the Manufacturer for information or spare parts.



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***

6.0 FORESEEN AND UNFORESEEN USE OF THE MACHINE

The use of the **Z-axis HBF** 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.

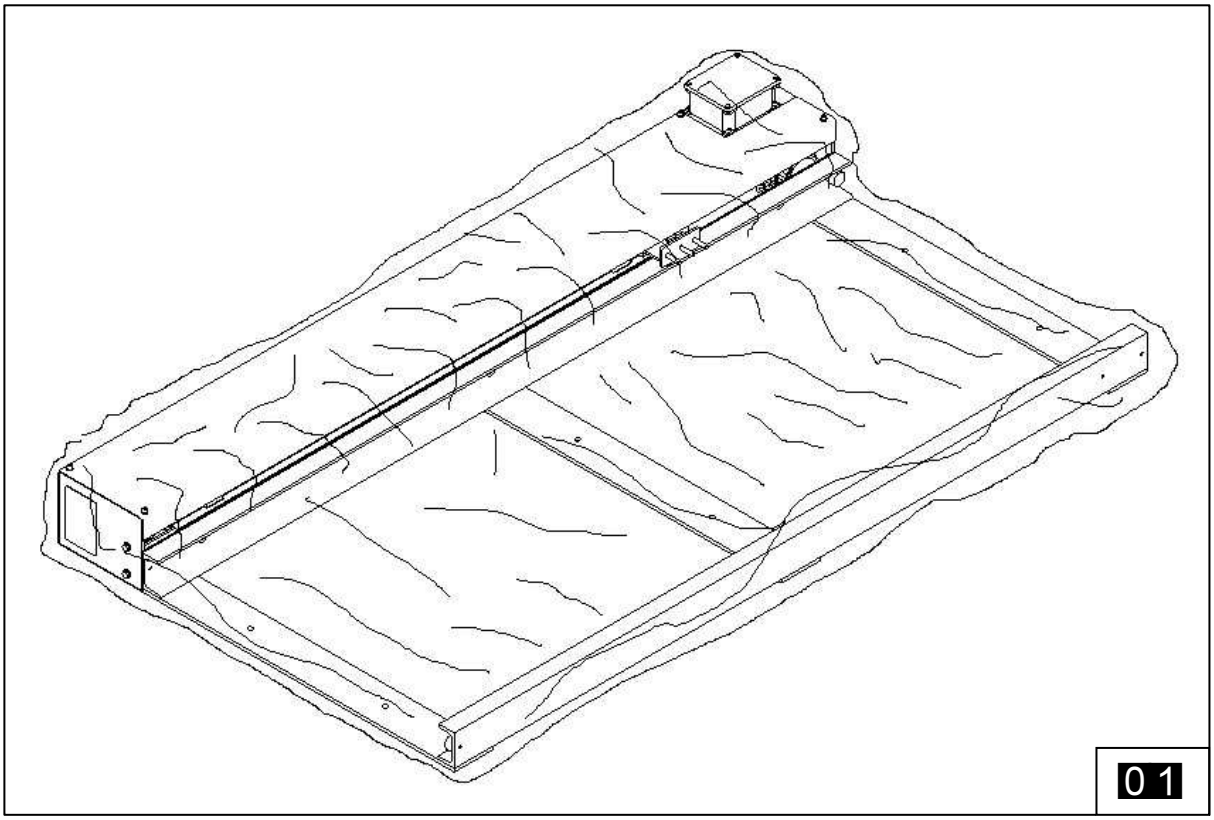
6.1 Residual risks

The normal automatic modality of the machine does not foresee 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 horizontal 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.

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. 0 1



7.1 Staff qualification

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

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.

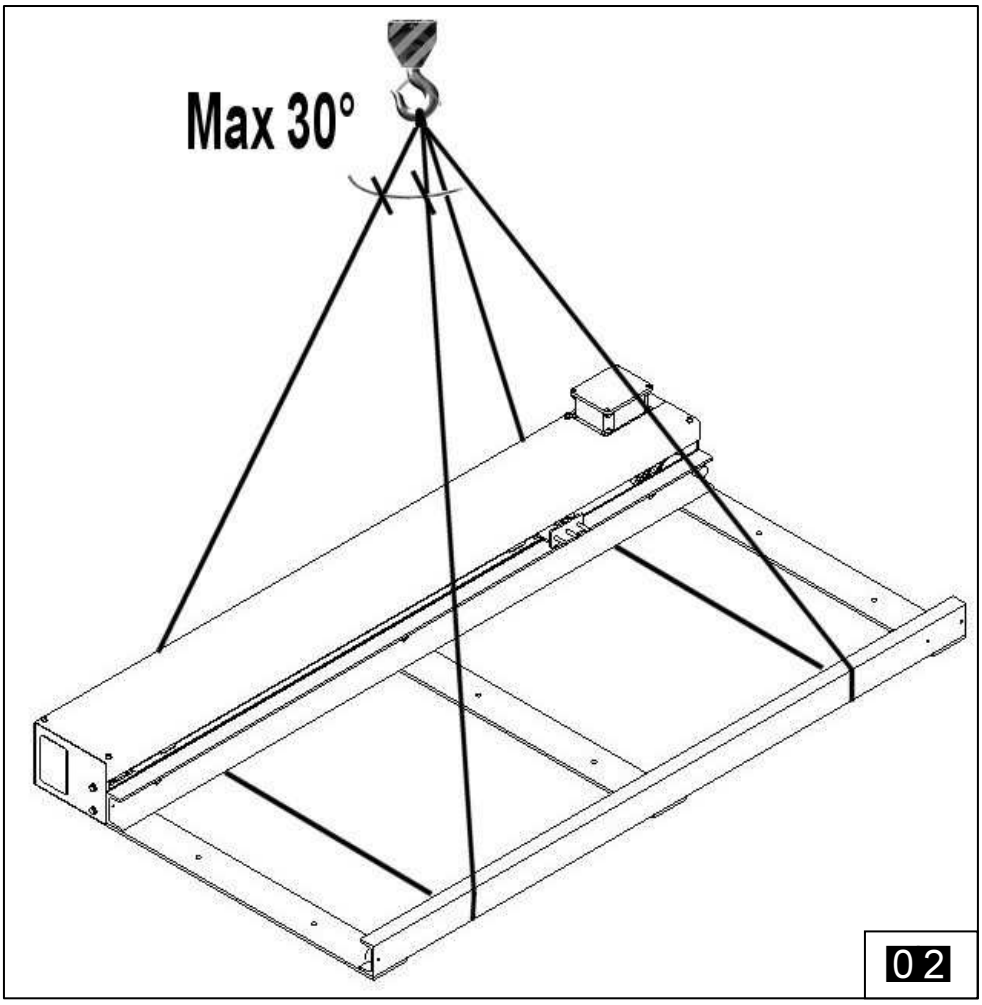
7.3 Advice about lifting

Depending on transport conditions, the z-axis by ***Nordson*** can be moved by lifting with ropes or fork lift trucks.
NOTE: it is necessary to carry out the charging and discharging operations keeping the x-axis horizontal.

7.3.1 Lifting with ropes

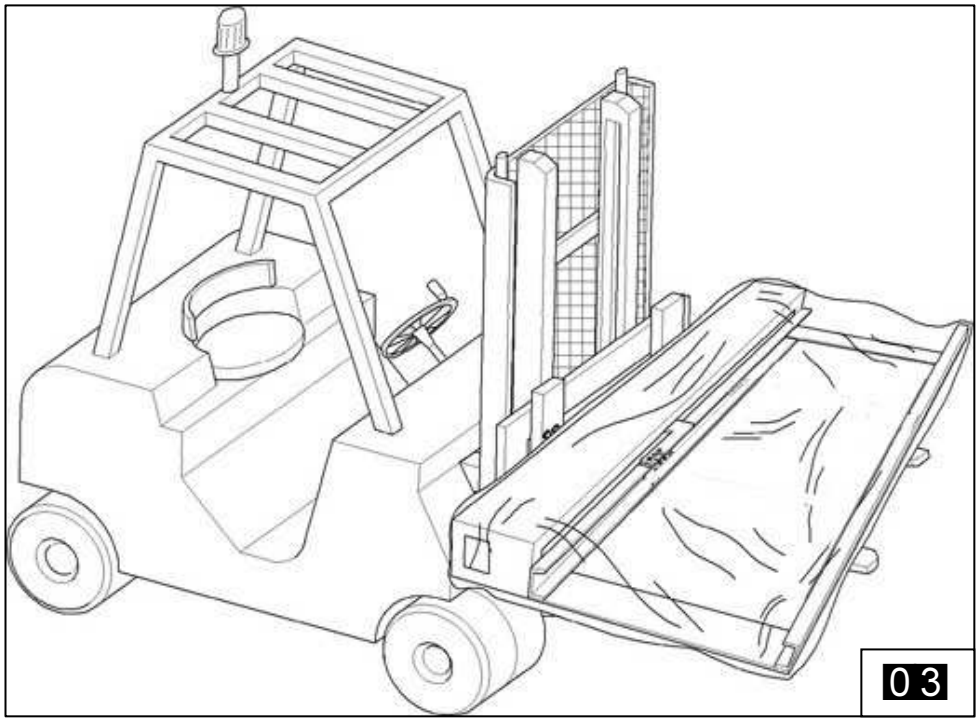
Place the lifting ropes in the points near the blocks, as indicated in figure **02 (01)**, using two ropes, with maximum corner equal to 30° and rope characteristics adapted to the lifting of loads indicated.

ATTENTION: take care to position the ropes, in order to avoid that they move during the machine lifting.



7.3.2 Lifting with machines

If the z-axis by ***Nordson*** is moved horizontally, it is necessary to lay it down on the forks of the forklift, facing down, as in figure 03.



ATTENTION: Do not lay the machine on the cover side, or lifting it vertically.

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.

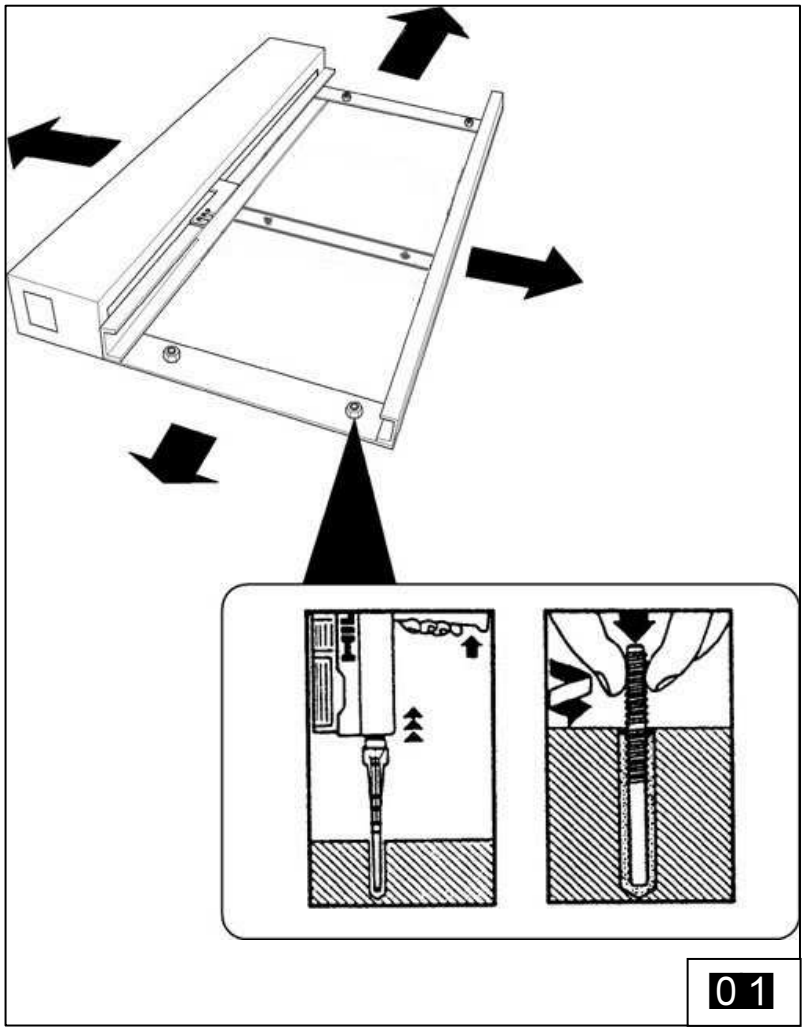
Any damage to the machine, loss of additional or supplied parts must be communicated immediately to ***Nordson.***

8.0 MACHINE INSTALLATION

During the installation, position the z-axis, keeping it horizontal.

The machine can be placed on a normal floor, suitable levelled.
To place the machine in a paint plant, it is sufficient to lift it and transport it up to the required position.
Once it is installed, adjust the machine, getting round any gradient of the ground, through the use of suitable levelling devices.
Block the machine to the ground, fixing it through screws and screw anchors. 0 1

Before start up the z-axis, it is necessary to adjust the anti-tilt device, as specified in chapter 09, paragraph 9.2



0 1

8.1 Environmental conditions

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

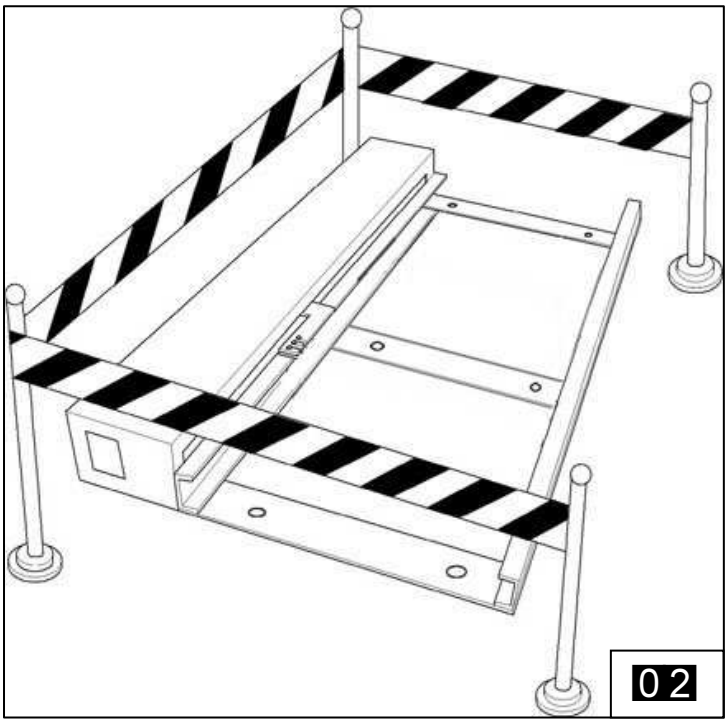
- Environmental luminosity **min.300 Lux.**
- Environmental temperature **+5°/+40° C**
- Relative humidity maximum **50%** at **40° C**
- Relative humidity maximum **90%** at **20° C**

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

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

8.2 Need of free spaces

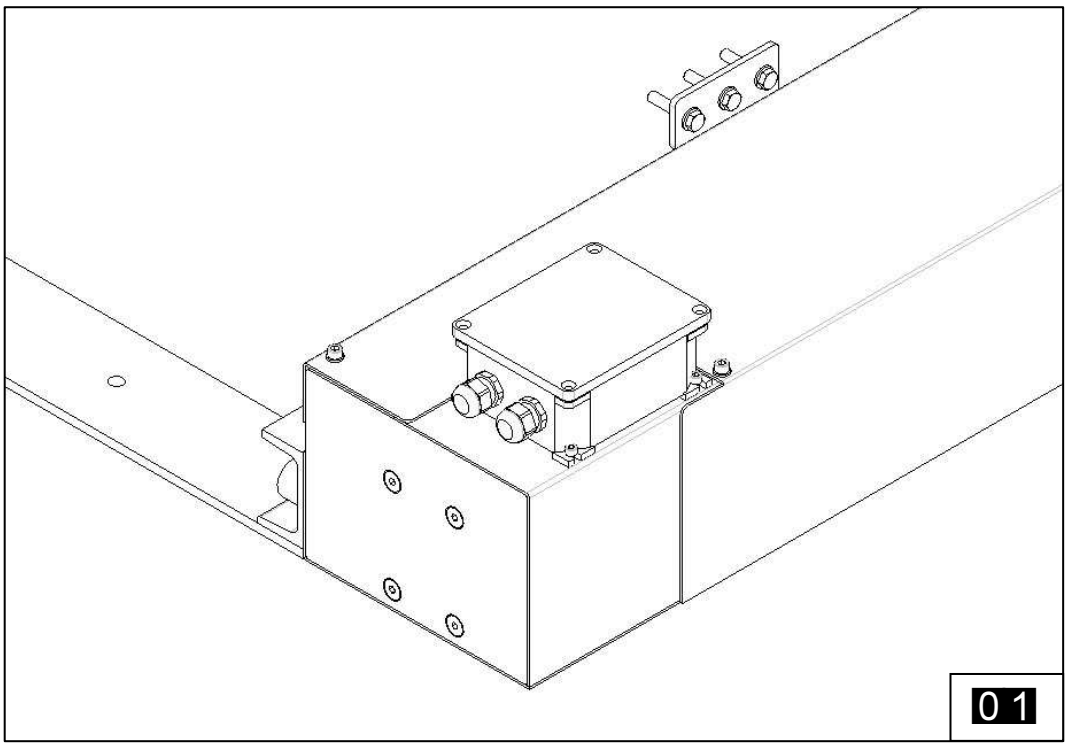
ATTENTION : When the z-axis is positioned, it is necessary to define the area, where the moving parts (gun supporting arm) have their range, according to the EEC laws regarding the security on working stations. 02



9.0 SETTING UP THE MACHINE

9.1 Connection of the z-axis to the control module

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



The emergency push button is inserted in the control keyboard.

In case of special executions, see the wiring diagrams of the plant.

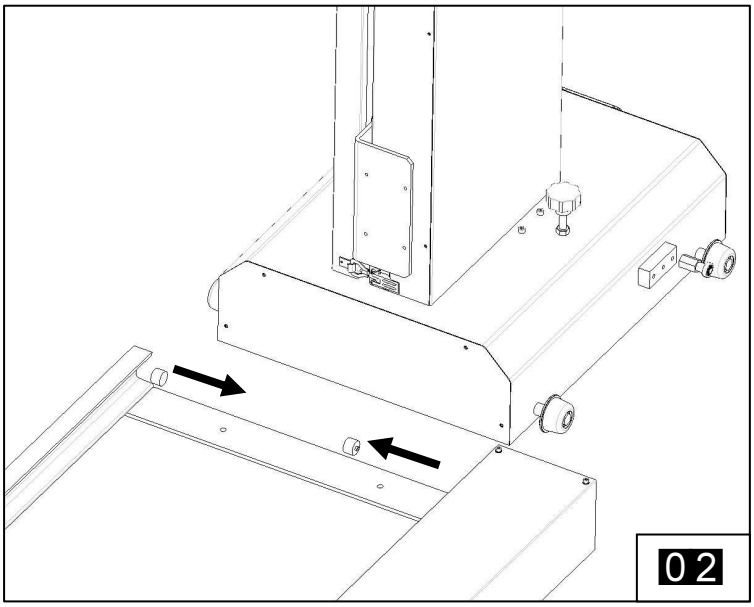
ATTENTION: on the grounds of the plant features, the z-axis HBF is predisposed to be connected to modules series HQ or it can also be used with the Nordson iControl – Application Control System. For further explanations about connections, contact in advance ***Nordson*** technical office.

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

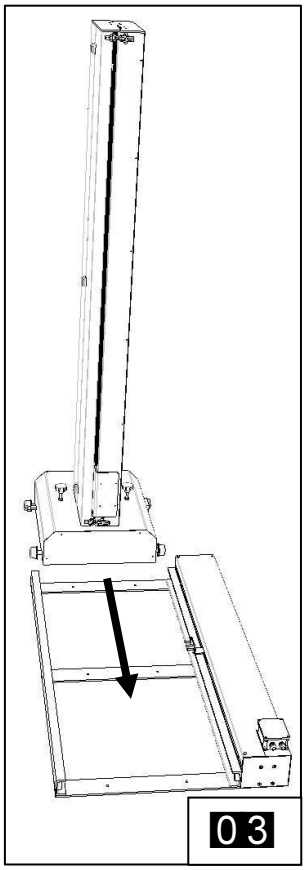
9.2 Assembly of the reciprocator on the z-axis

To assemble the reciprocator on the z-axis, follow the procedure below:

- Unscrew and remove the rubber dampers as indicated in the fig. 02.



- Move the reciprocator forward and direct it in the rails, as indicated in the fig. 03.

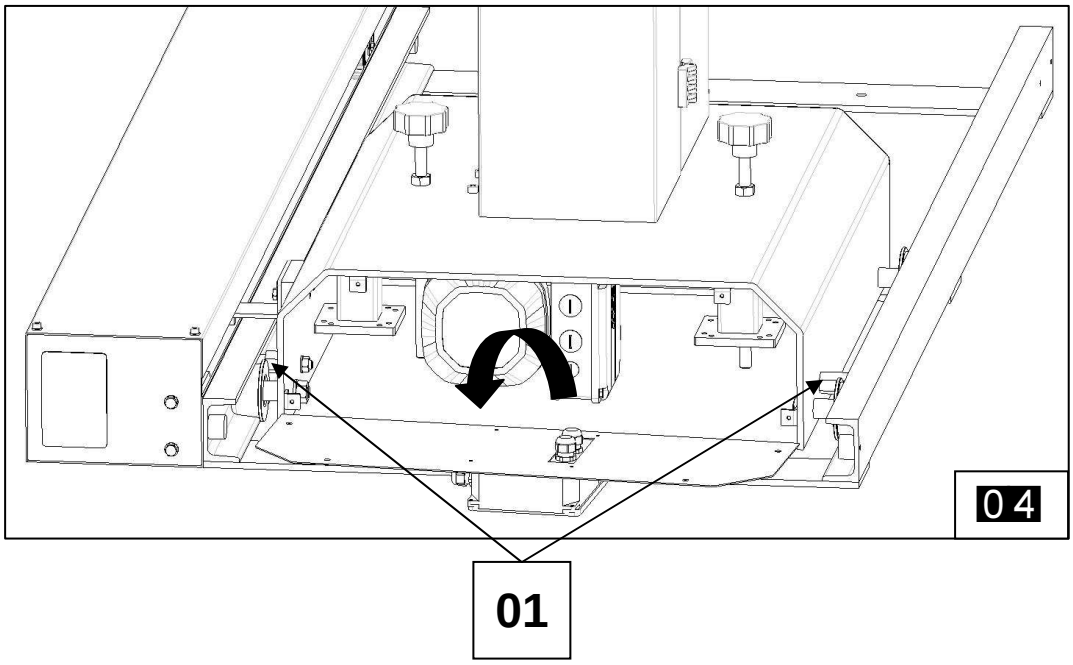


- Fix the rubber dampers, previously removed.

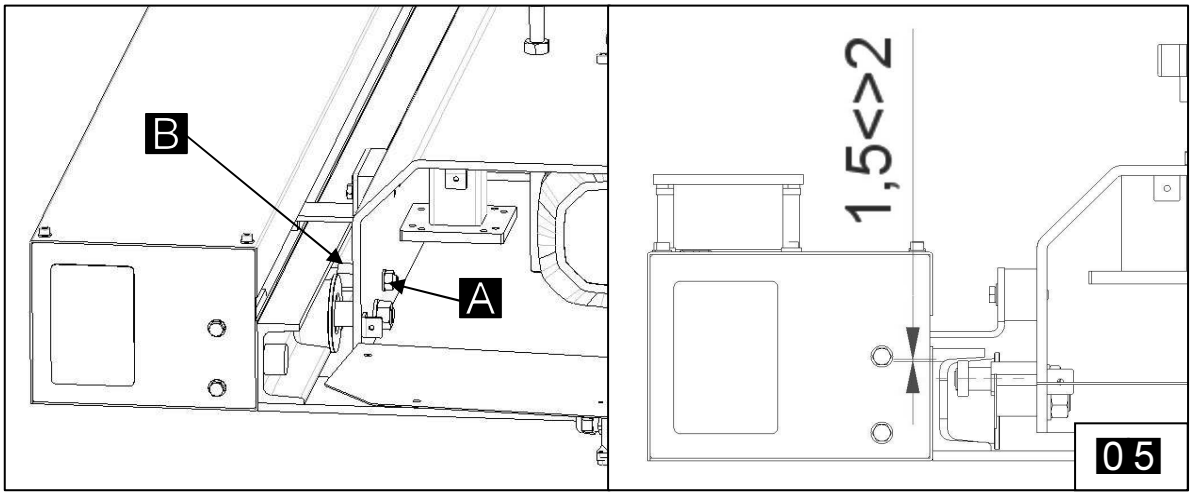
9.2.1 Adjustment of the overturning device

For correct use of the z-axis, it is necessary to adjust the anti-tilt devices 04**(01)** with adjustable eccentric roller, as indicated in the figure below.
Follow the operations below for the adjustment:

- Remove the rear cover of the reciprocator.



- Loosen the nut B and, through the adjustment of the hexagonal stud A, position the anti-tilt device as indicated in the fig.05 and again lock the nut B.



- Carry out the same operation for the opposite device.

N.B.: it is necessary to have a minimum distance of 1,5<>2 mm between the bearing and the upper “C” rail.

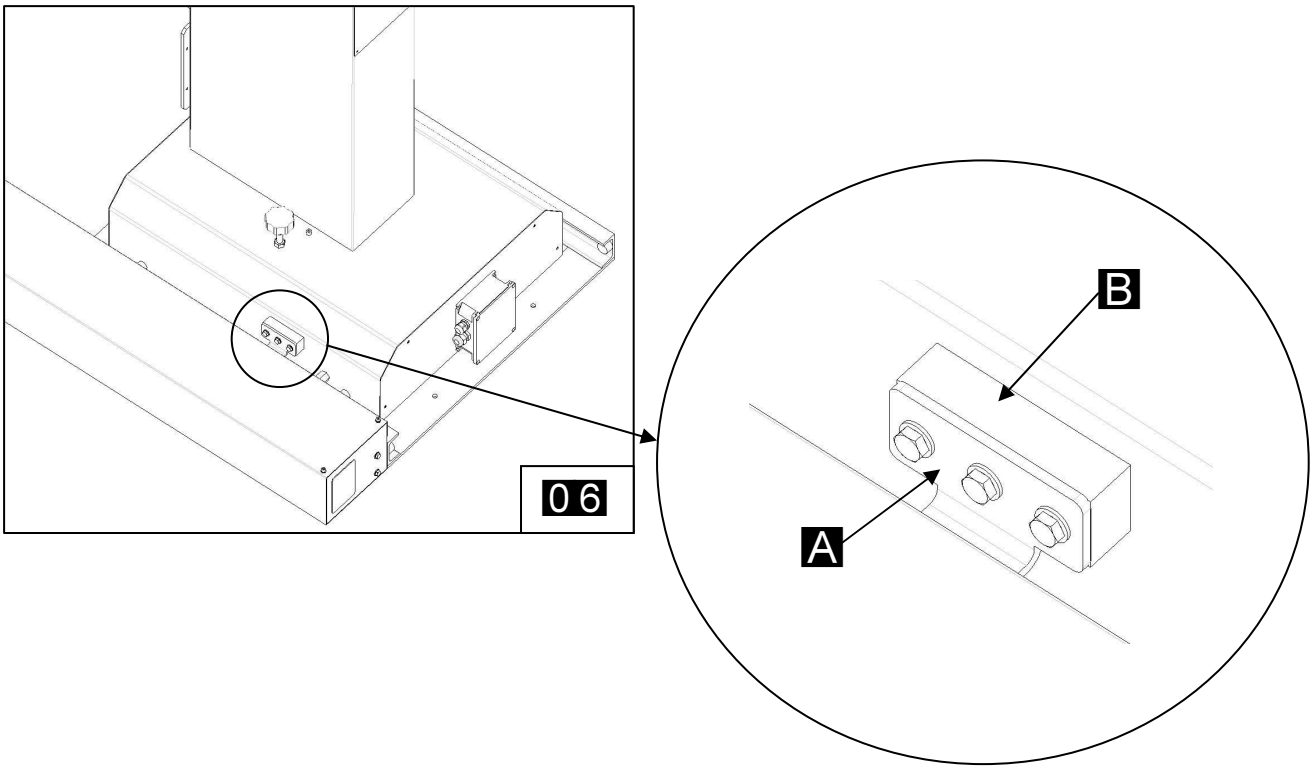
- Move manually the reciprocator backwards and forwards, to check there are no mechanical blocks or excessive friction.

- Close the rear cover of the reciprocator.

9.2.2 Connection of the reciprocator to the z-axis

To connect the reciprocator to the z-axis, do the following operations:

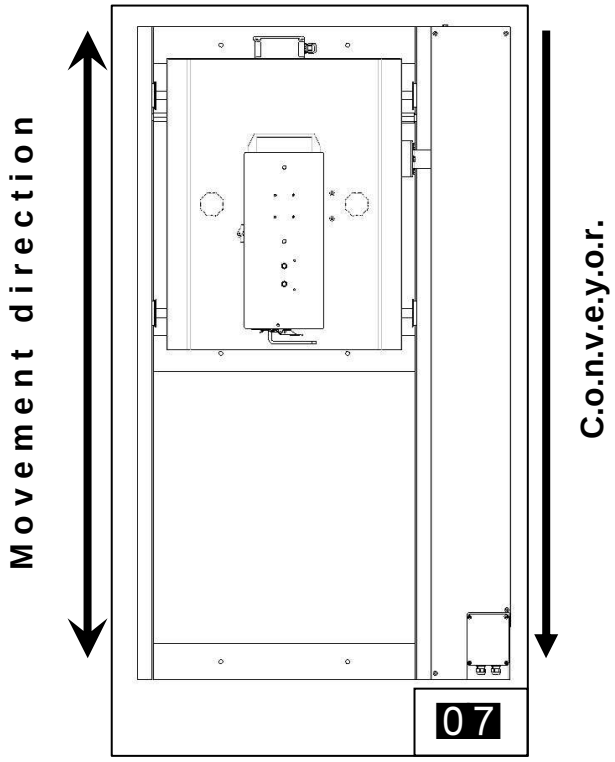
- Connect the bracket A to the reciprocator, making sure to put the spacer B in as in the fig.06



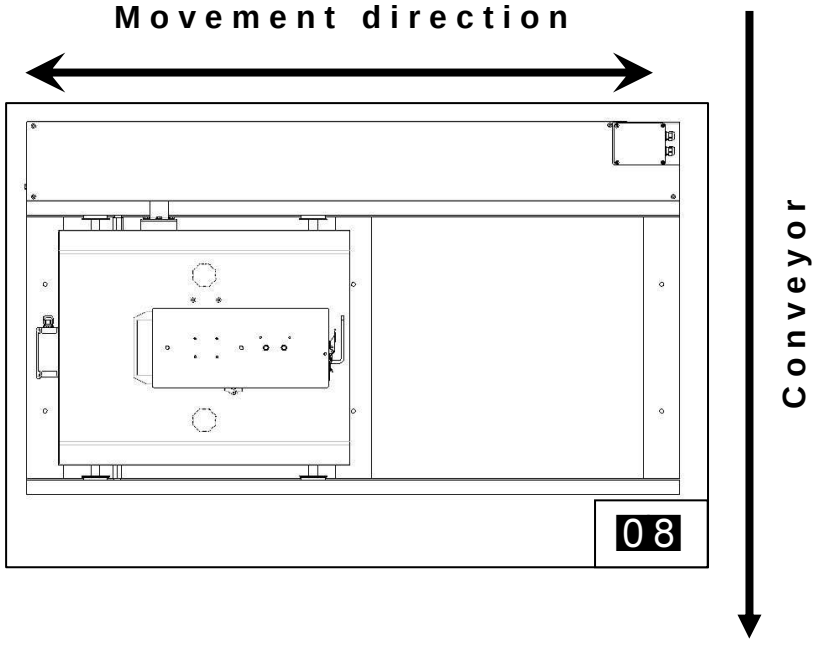
9.3 Examples of assembly

Examples of assembly/use of reciprocators on the z-axis are now shown.

PARALLEL ASSEMBLY: fitted to every tracking or step-to-step systems.



PERPENDICULAR ASSEMBLY: fitted to approach or move away the guns.



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.***

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 **Z-axis mod. HBF** by ***Nordson*** is design to be operated by control module series HQ, however, they can also be used with the Nordson iControl – Application Control System.

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 common to the whole plant.

ATTENTION: to reset press the **EMERGENCY** push button, with rotating it.

NOTE: the emergency/stop push button is not located on the machine, but on the general panel of the plant.

11.0 USE OF THE MACHINE

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

12.0 MAINTENANCE

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

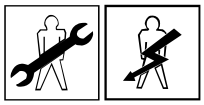
12.1 General safety advice

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:

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



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.

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									The 1st time after one week
Guide cleaning									

12.4 Summery table of suggested spare parts

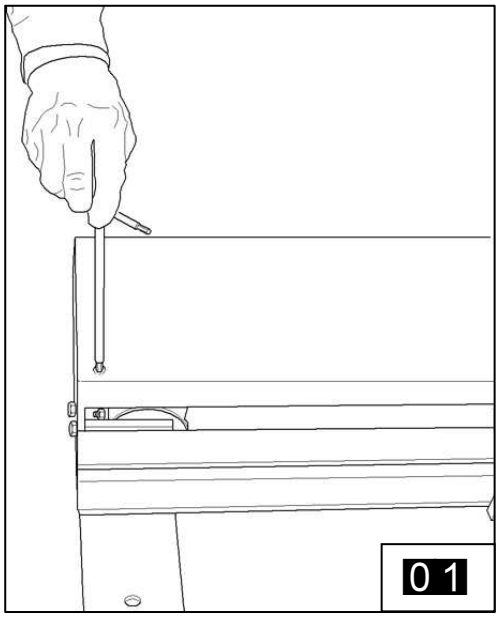
The following components are subject to wear and so a suitable stock should be kept.

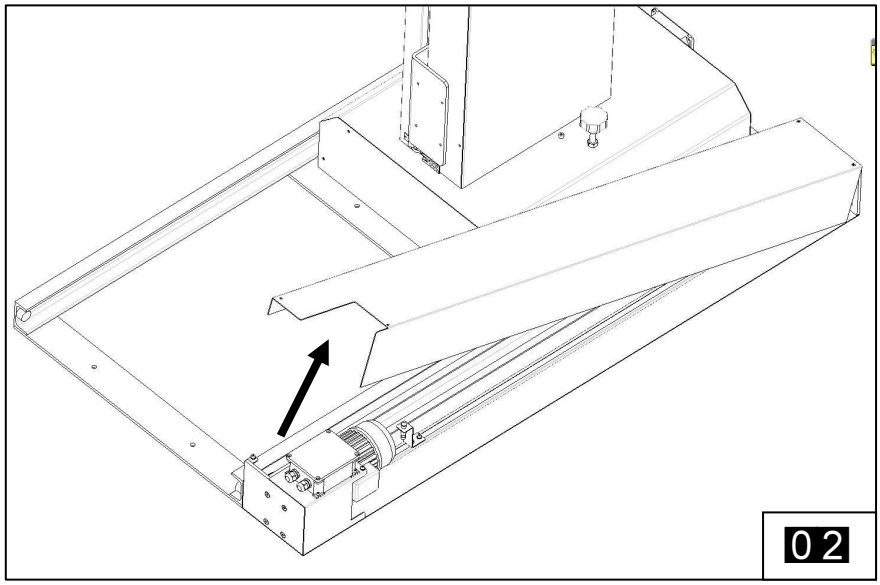
Part Number	Description
7034382	Toothed belt for HBF 10
7034383	Toothed belt for HBF 15
736339	SENSOR,INDUC.,PNP,NC,12MM DIA
7034353	Encoder , HF Series
736358	Encoder coupling
7034376	Gearmotor, HBF

12.5 Replacement of the gearmotor

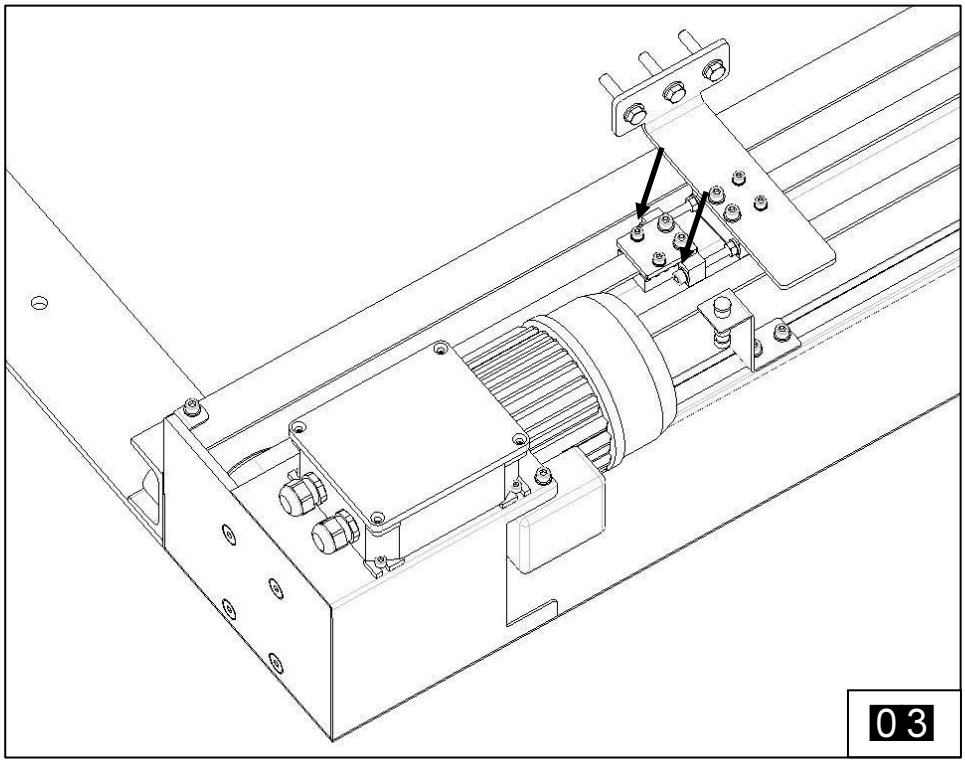
To replace the gearmotor, do as follows:

- Position the reciprocator at the opposite side of to the cables output.
- Switch off the machine.
- Unscrew the screw that fix the cover, then lift it and remove it 0 1 0 2



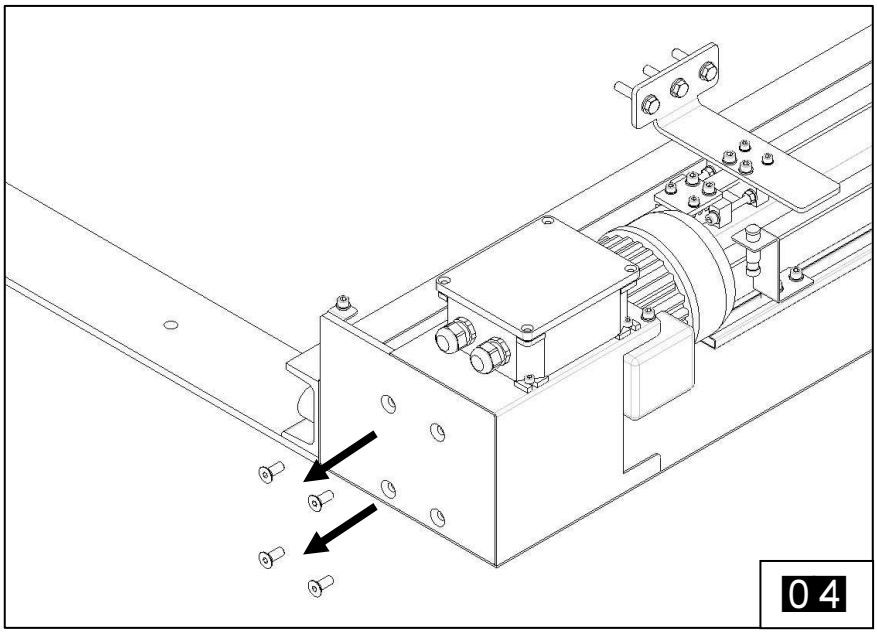


■ Loosen the toothed belt, by unscrewing the screws from the tightener. 03
NOTE: to make the operation easier, loosen first the counter nuts.



■ Remove the belt from the driving and snub pulley.

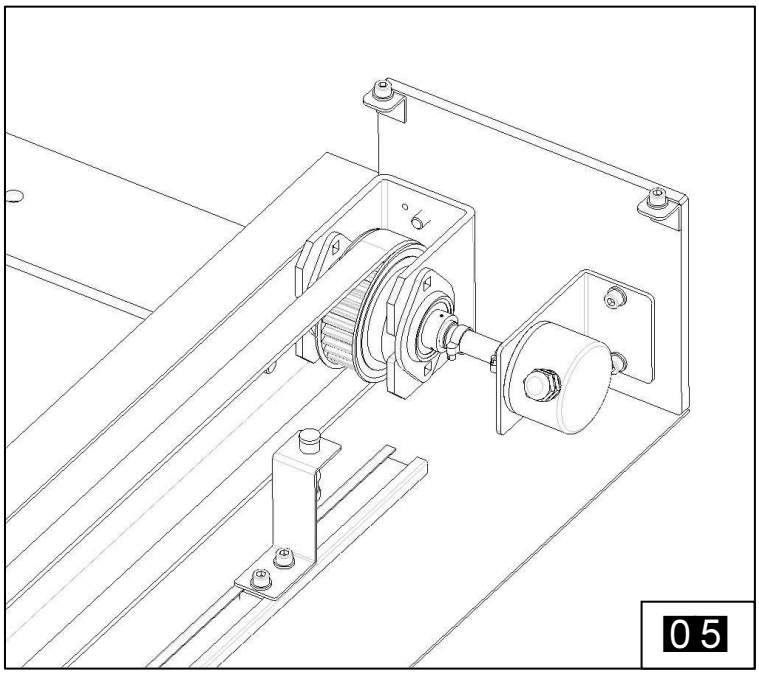
■ Unscrew the four screws that fix the gearmotor. 04



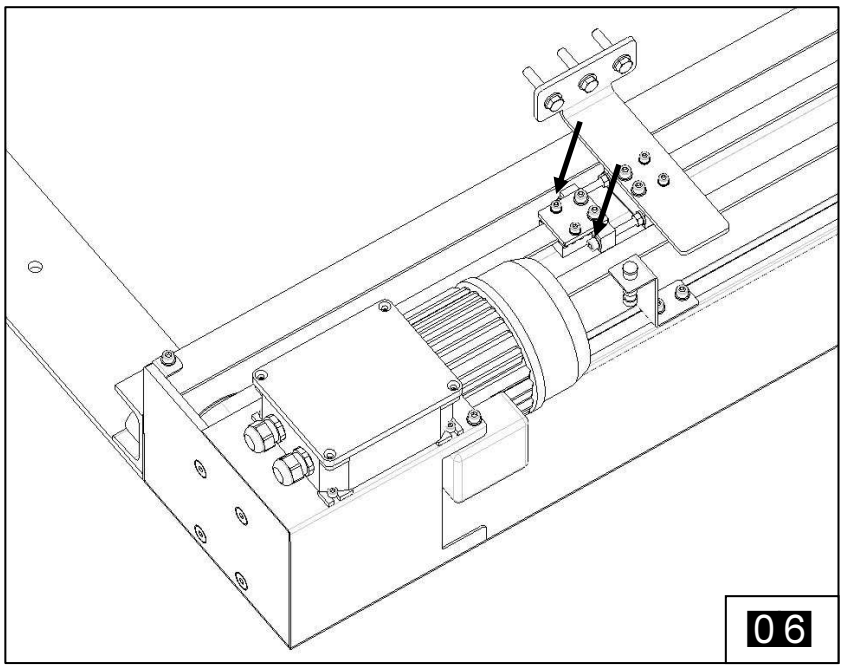
- Then remove it from the machine.
- Remove the pulley from the gearmotor and place it in the new one.
- Remove the interface plate of the gearmotor, removing the relative screws, and fix it on the new gearmotor.

NOTE: see the following paragraph to remove the pulley.

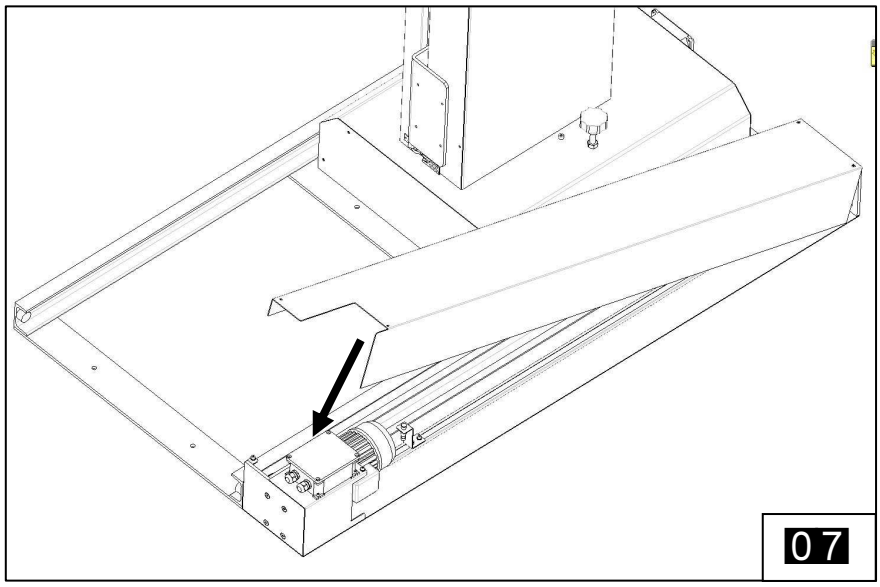
- Assemble the new gearmotor repeating the reverse operations.
- Position the belt on the pulleys (driving and driven). 05

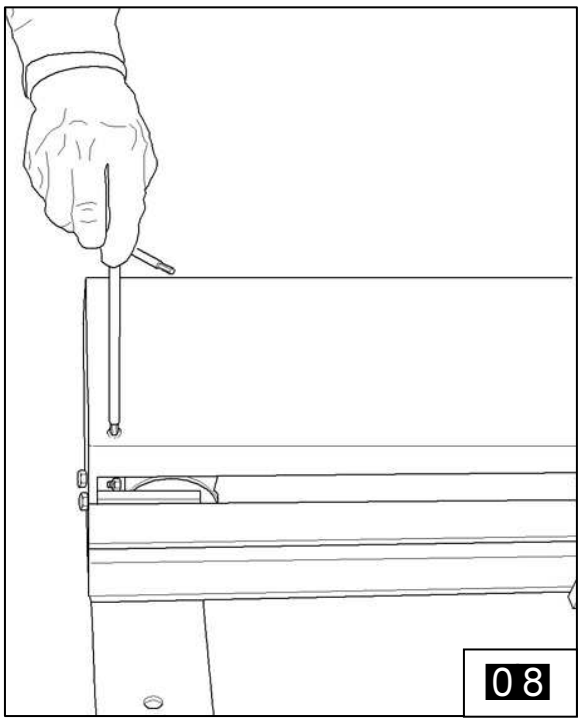


- Adjust the belt tension operating on the two screws of the tightener (see paragraph 12.10) 06



■ Close the machine by reassemble the cover, fixing it with the relative screws. 07 08





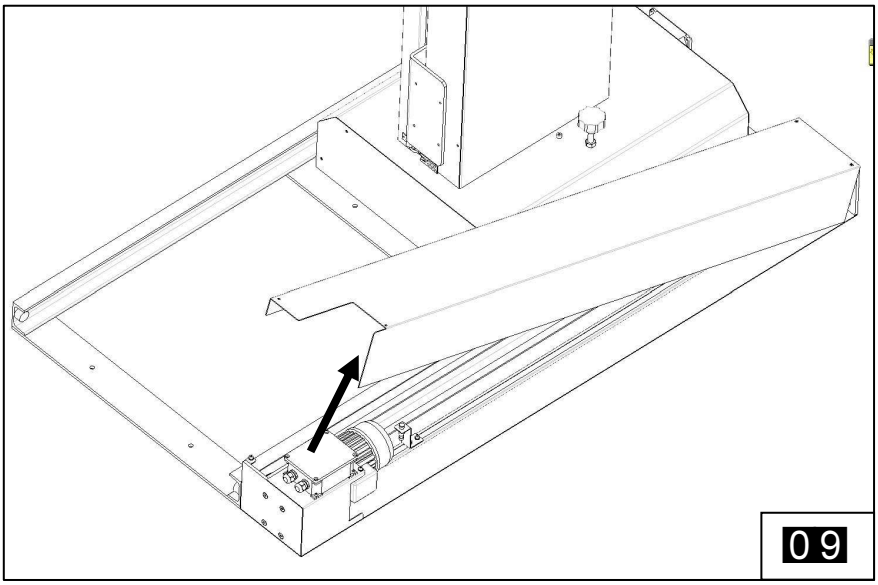
ATTENTION: Once the belt has been tensioned, apply Loctite to the adjusting screws.

ATTENTION: During the connection of the motor, check its correct direction of rotation.

12.6 Replacement of the pulley

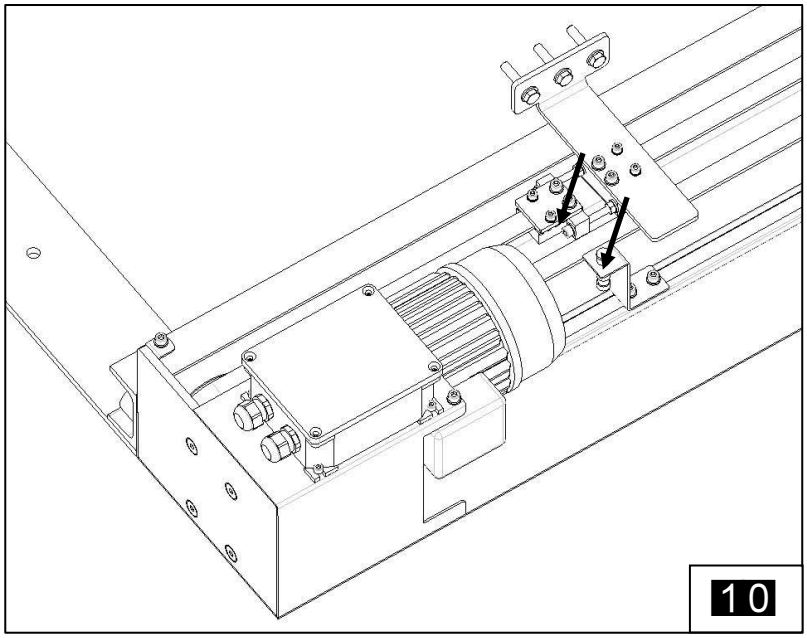
Because of the position of the motor gear (located at the side of the machine) in order to remove the pulley it is necessary to do as follows:

- Position the trolley with the reciprocator at the opposite side of the cables output.
- Switch off the machine.
- Unscrew the screws that fix the cover, lift it and remove it 09

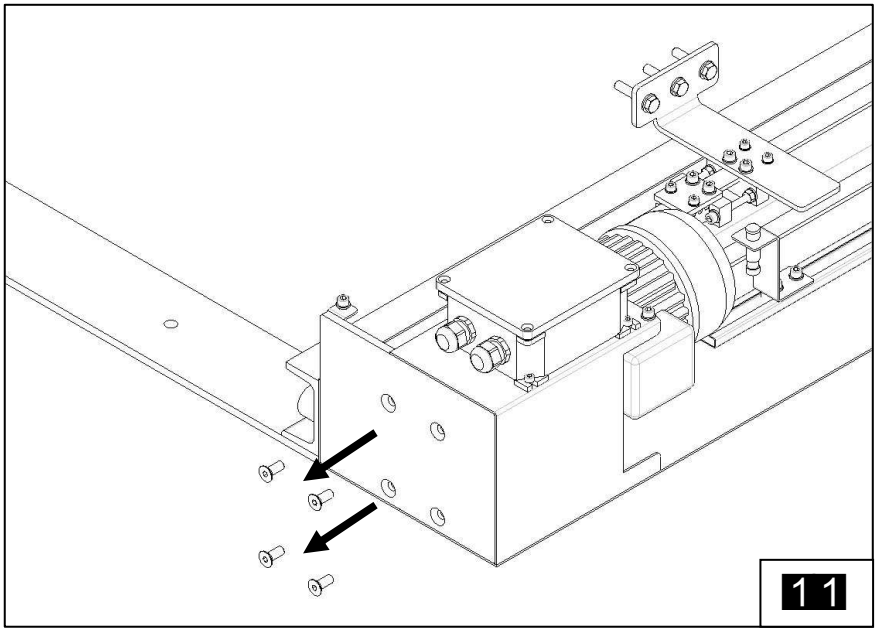


- Loosen the toothed belt, unscrewing the two screws of the tightener. 10

NOTE: to help the operation, loosen first the counter nuts.



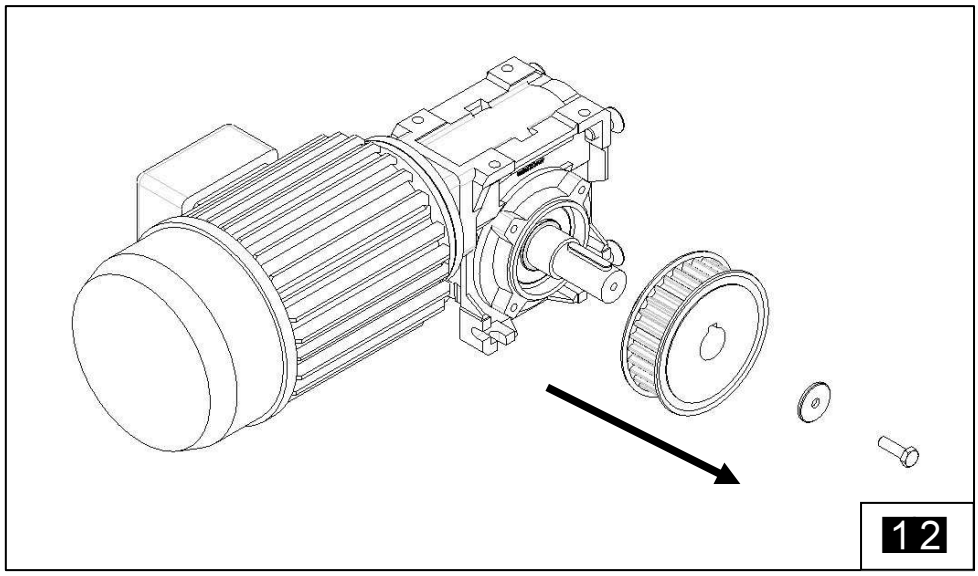
- Remove the belt from the pulleys.
- Remove the four screws that fix the gearmotor. **11**



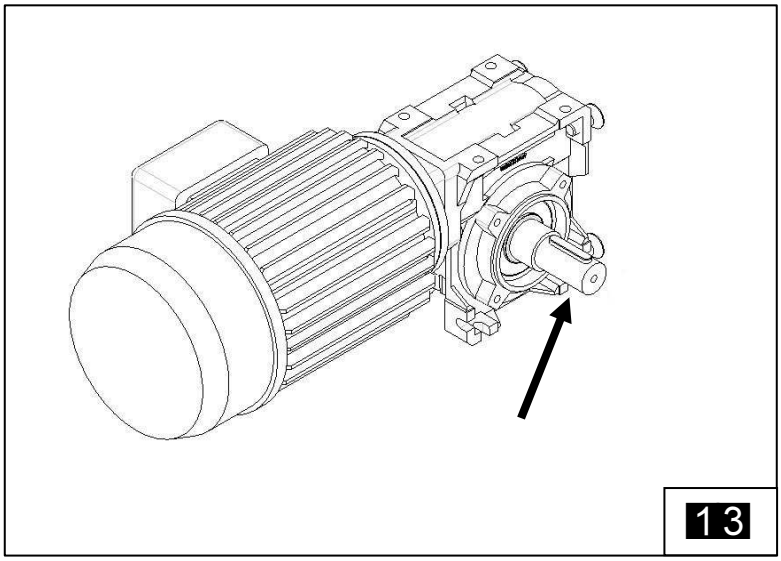
- Remove the gearmotor.

NOTE: the movement from the shaft to the pulley is transmitted via a key inserted in the special seat (on the shaft and on the pulley); the screws keep the pulley in position.

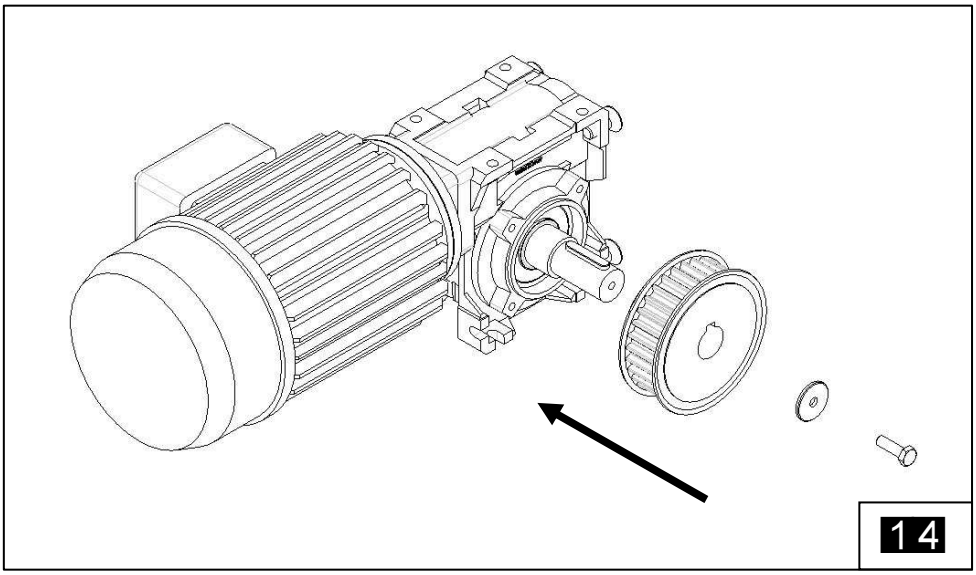
- Remove the pulley from the gearmotor. **12**



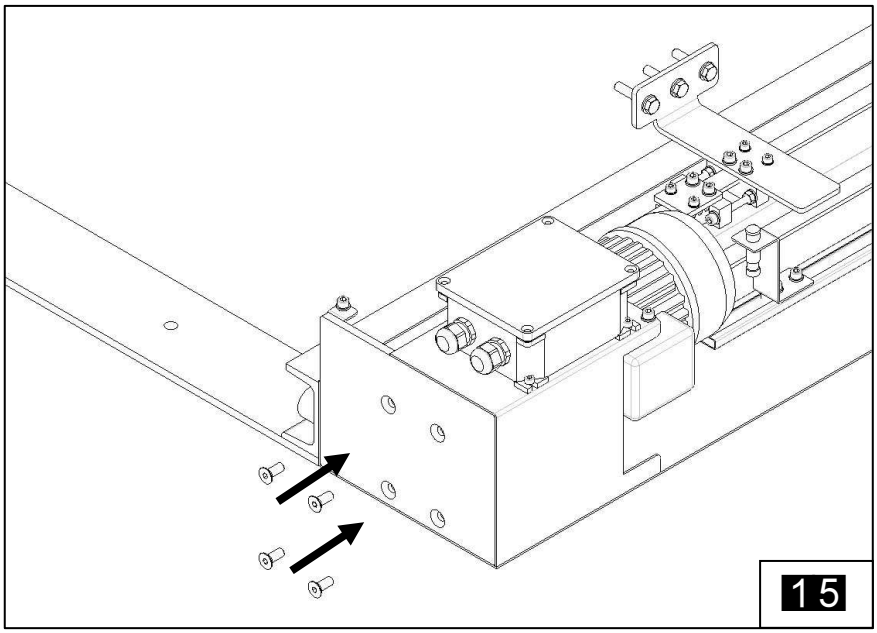
- To remove grease or dirt, clean the shaft. 13



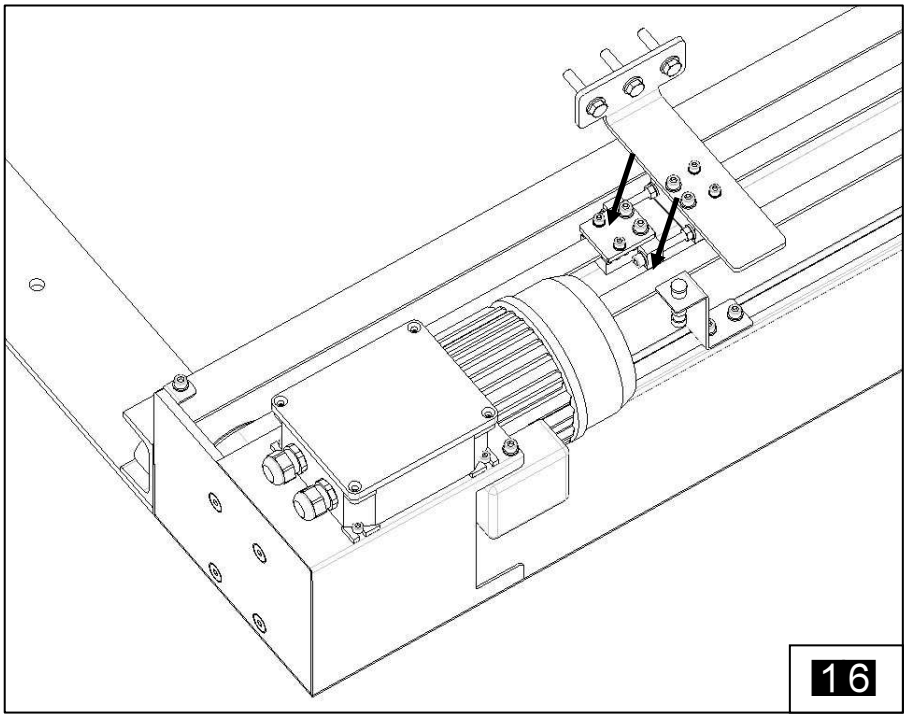
- Now it is possible to assemble the new pulley.
- Screw the screw that block the pulley, tightening it with a suitable wrench. 14



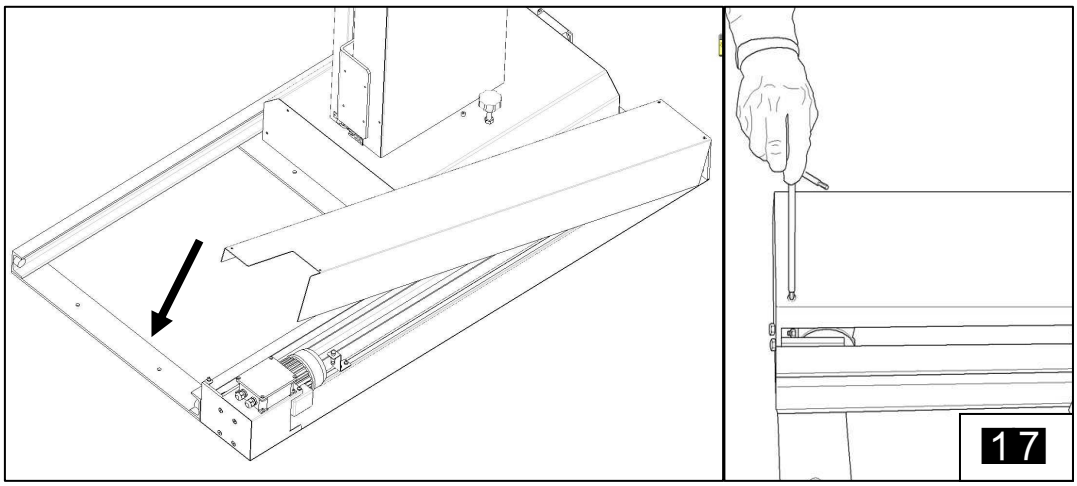
- Reassemble the gearmotor, screwing the 4 screws that fix it. **15**



- Reassemble the toothed belt and adjust the tension, referring to chapter 12.10. **16**

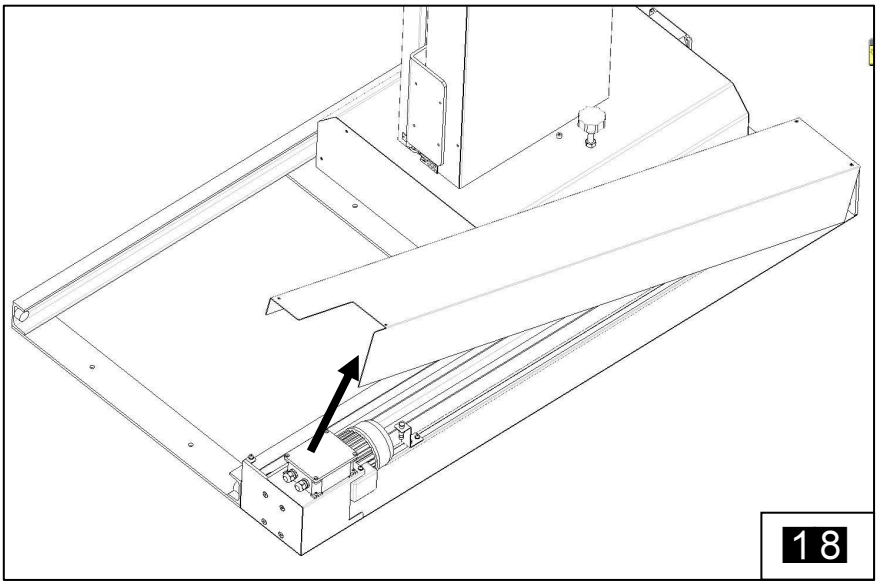


- Reassemble the cover and fix it with the relative screws. 17

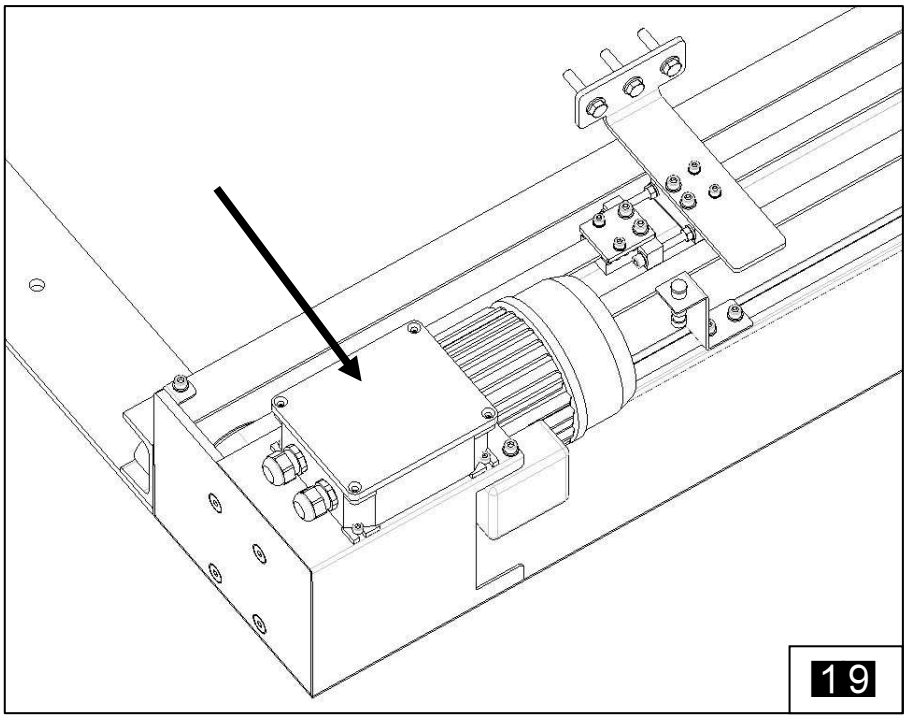


12.6 Replacement of the limit switches

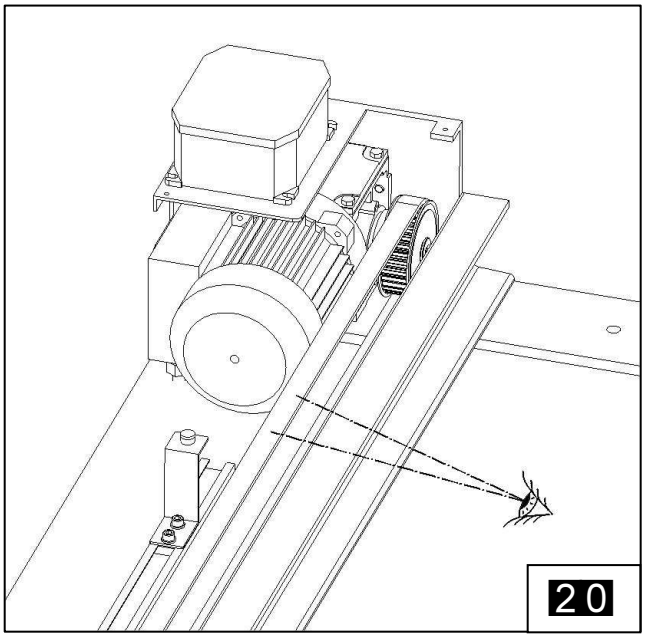
- Switch off the machine, remove the cover, unscrewing the relative socket head screws. 18



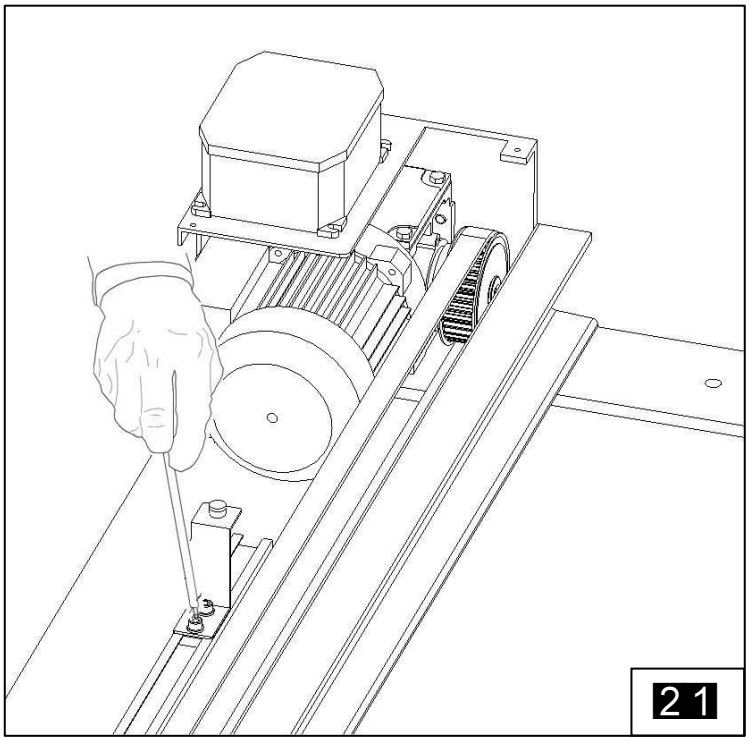
- Open the connection box and disconnect the sensors. 19



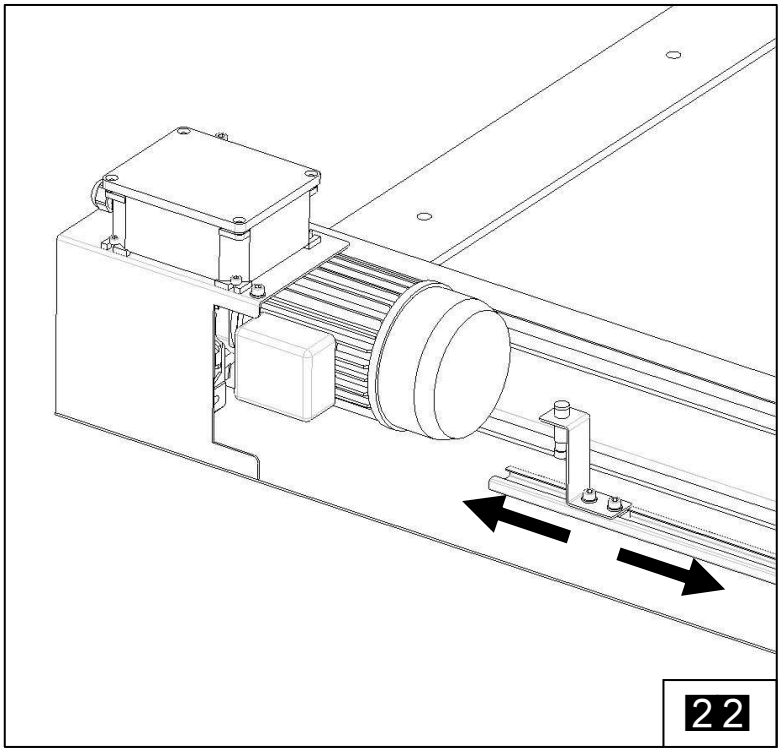
- Mark the position of the sensor to replace. 20



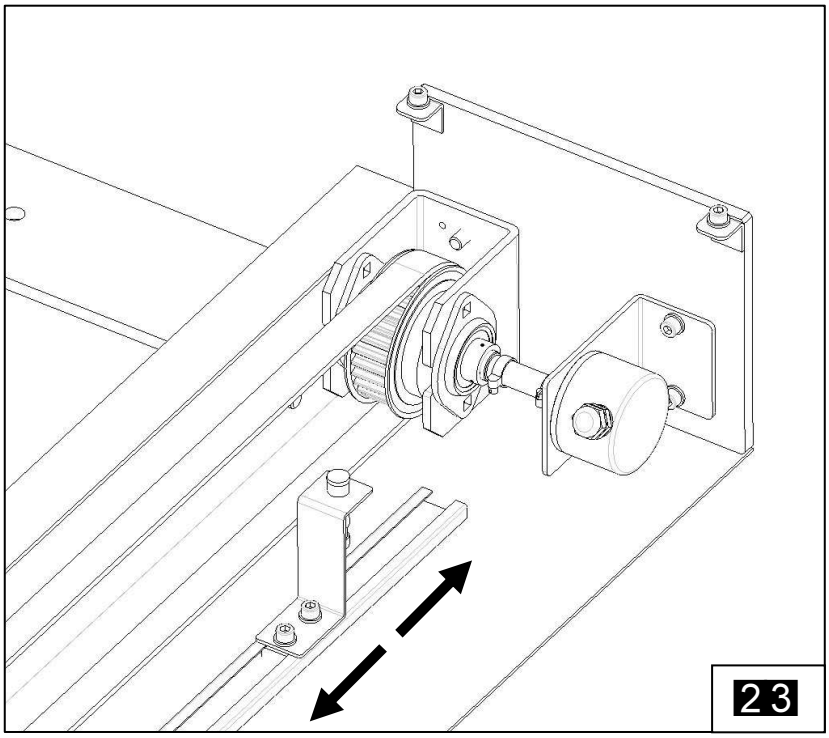
- Loosen, with a setscrew wrench, the screws that fix the sensor to the guide and remove the electric connections. 21



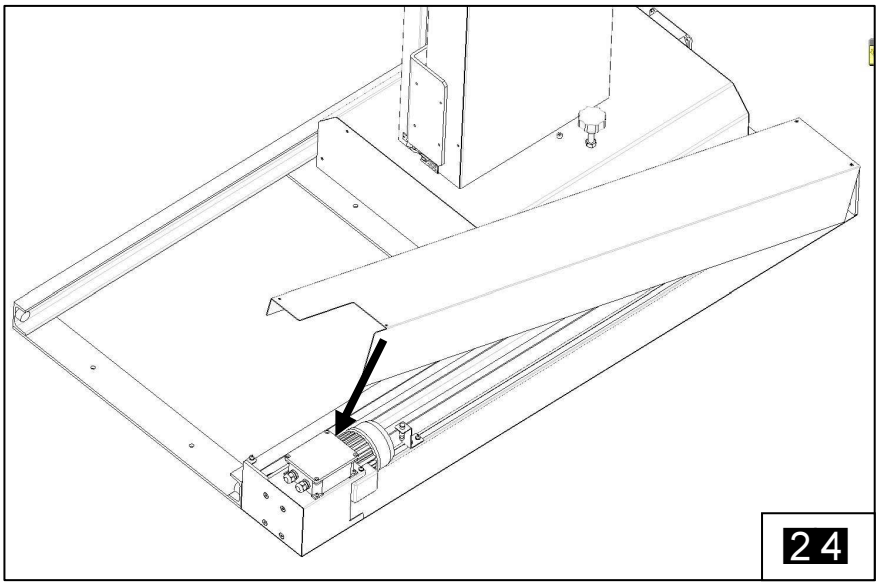
- Replace the sensor and restore the connections (check the wiring diagrams). 22



- Adjust the position of the sensor, referring to the mark on the guide.
- If necessary, adjust also the position of the other sensor, in order to reach the stroke desired value. 23

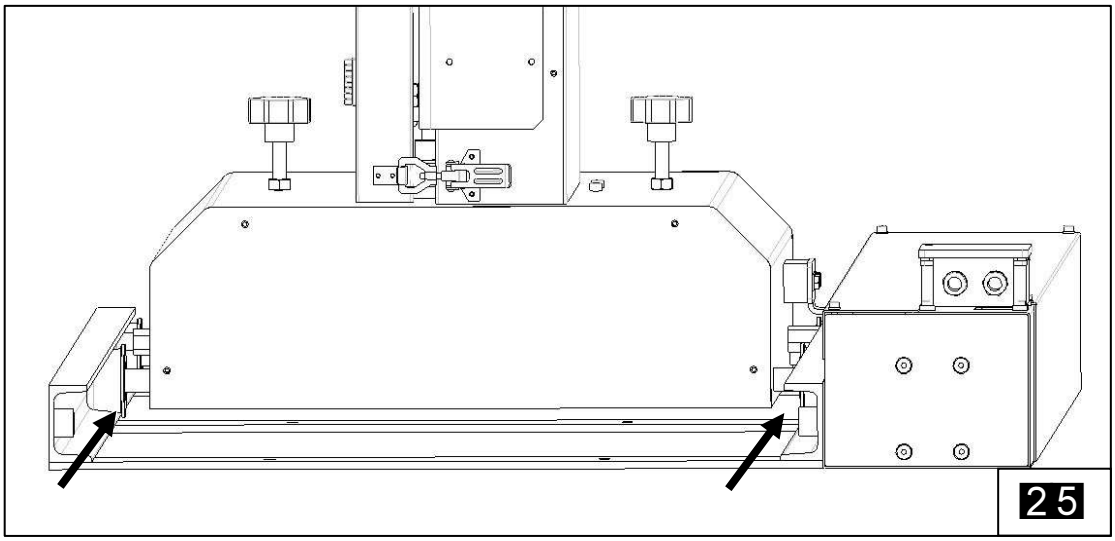


- Once the adjustment has been finished, close the machine assembling the cover. 24



12.8 Adjustment of the wheels

- Due to the manufacturing features, the supports of the wheels are fixed and no adjustments are provided. 25



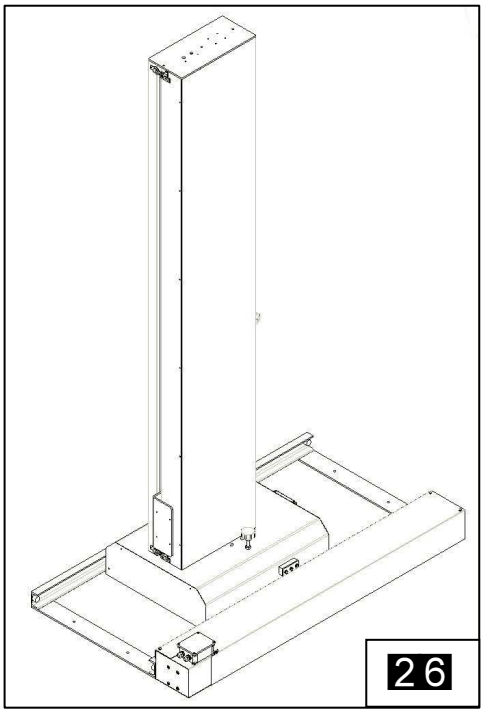
12.9 Replacement of the wheels

- To replace the wheels, contact the ***Nordson*** assistance service.

12.10 Replacement and adjustment of the belt

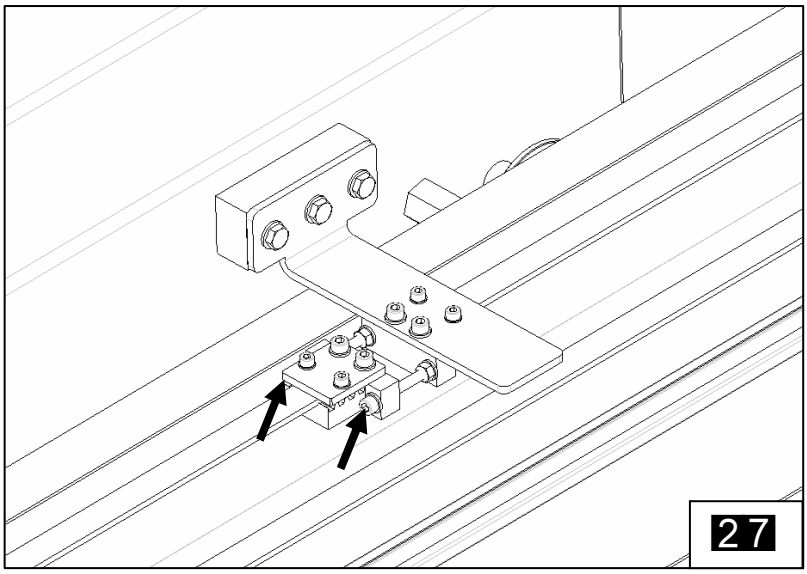
To replace the toothed belt do as follows:

- Position the reciprocator in the middle of the z-axis. 26

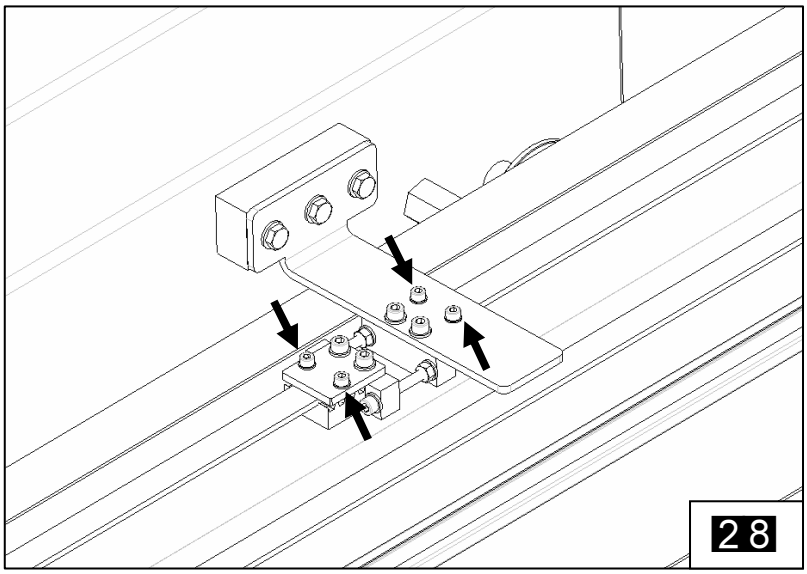


- Switch off the machine and remove the cover.
- Unscrew the screws of the tightener, in order to loosen the toothed belt. 27

NOTE: to make the operation easier, unloosen first the locking nuts.



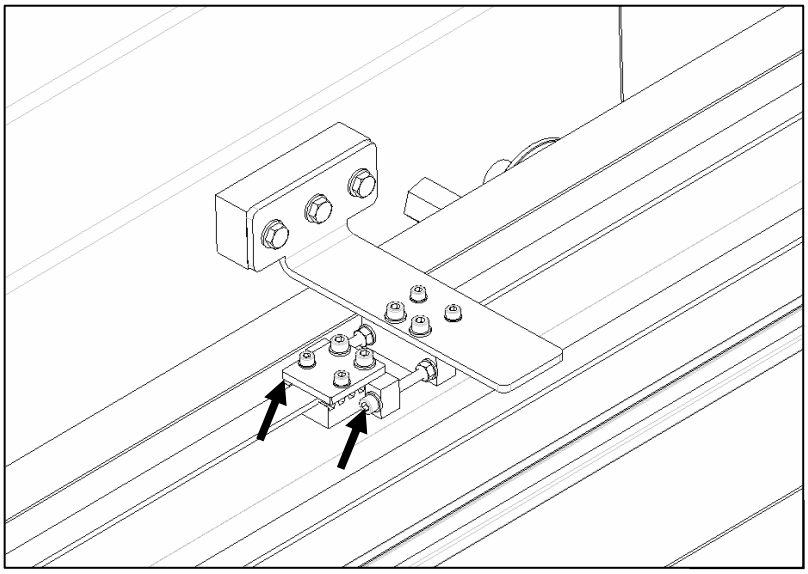
- Remove the belt, unscrewing the fixing screws and extracting it from the pulleys. 28



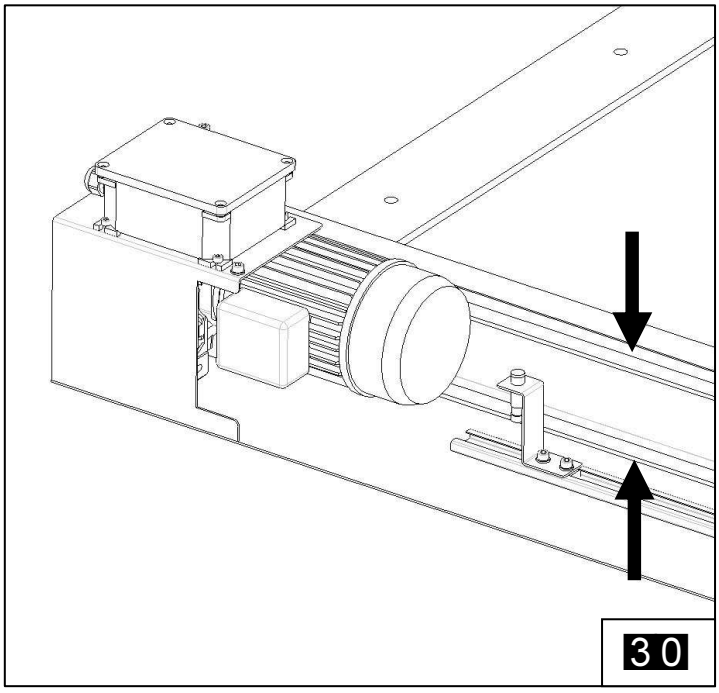
- Remove the toothed blocks from the belt, unscrewing the relative screws. Replace the belt with a new one, carrying out the reversal procedure.

- Adjust the belt tension, operating on the tie rods so as to reach the correct value. 29

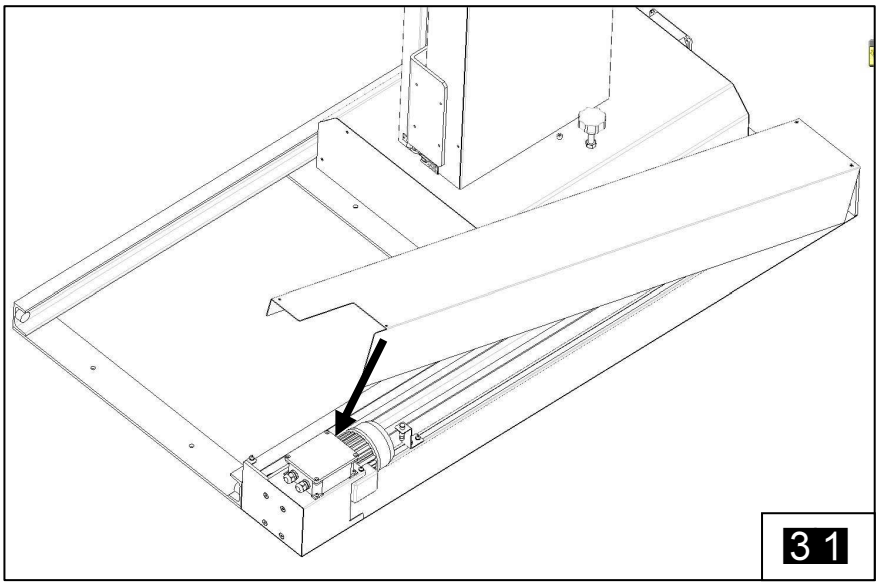
NOTE: to centre correctly the belt, it is necessary that the sides of the blocks are parallel.



- Check manually the tension of the belt. 30



- Block the tightener by locking the nuts.
- Close the machine reassembling the cover with the relative screws. 31

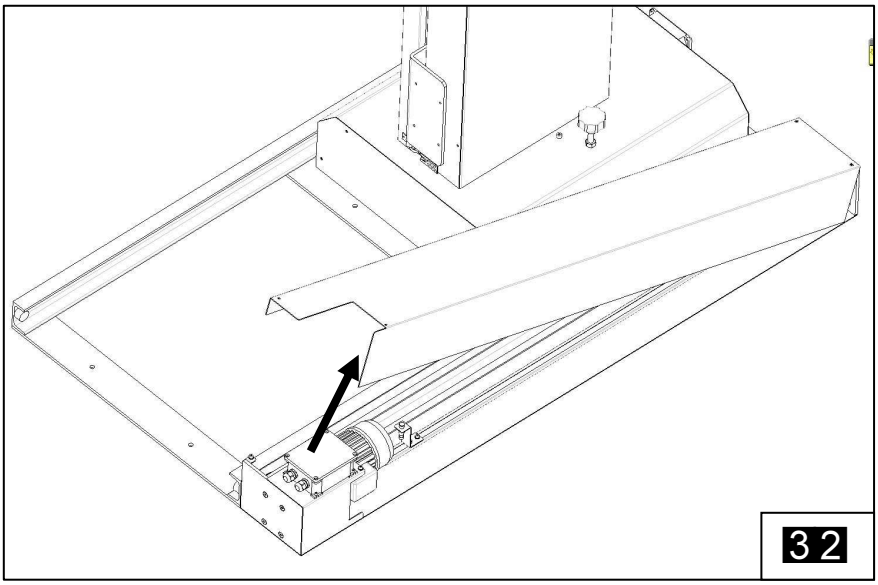


12.11 Replacing of the driven pulley

ATTENTION: To carry out this operation it is necessary to position the trolley at the side of the motor gear (connection box).

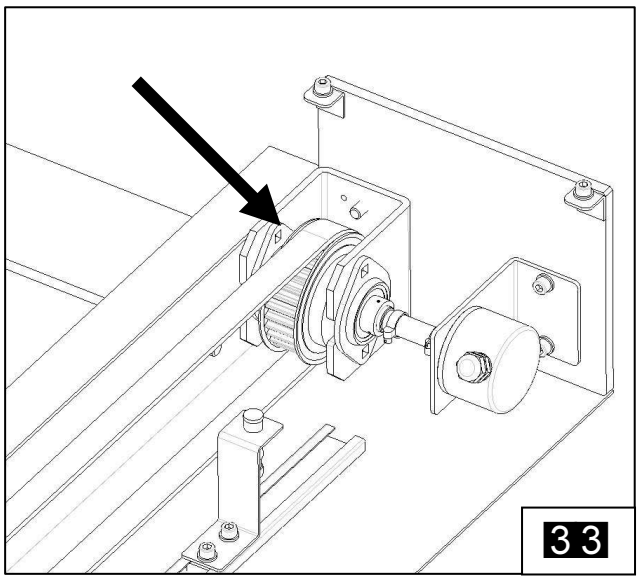
To replace the driven pulley, do as follows:

- Switch off the machine and remove the cover, by unscrewing the relative screws. 32

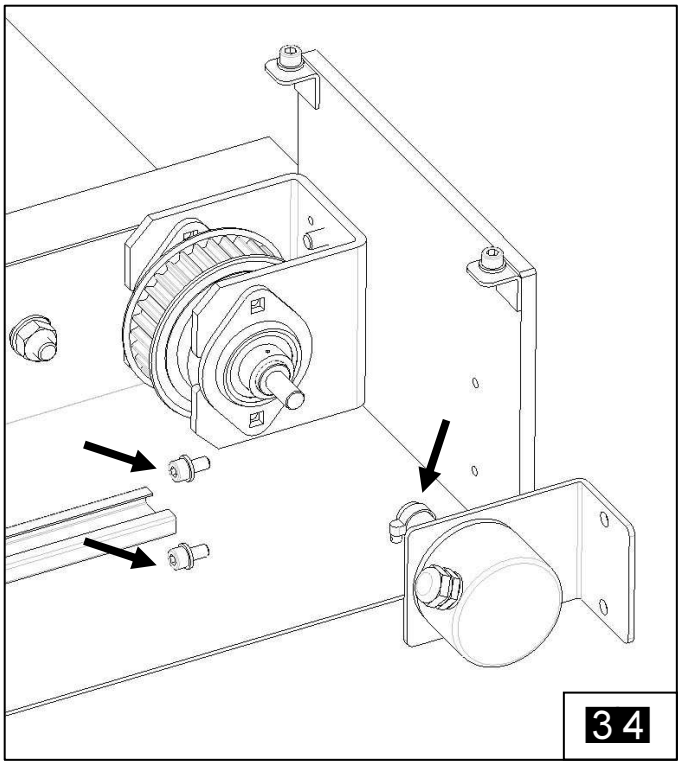


- Unloosen the belt tension, remove the blocks, following the procedure described in the previous paragraph.

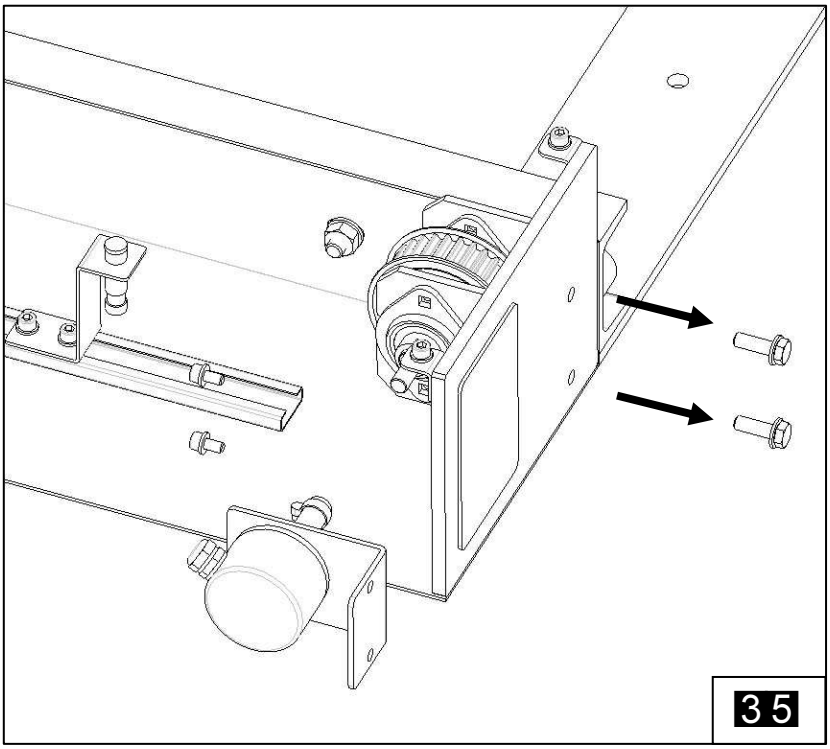
- Remove the toothed belt from the driven pulley. 33



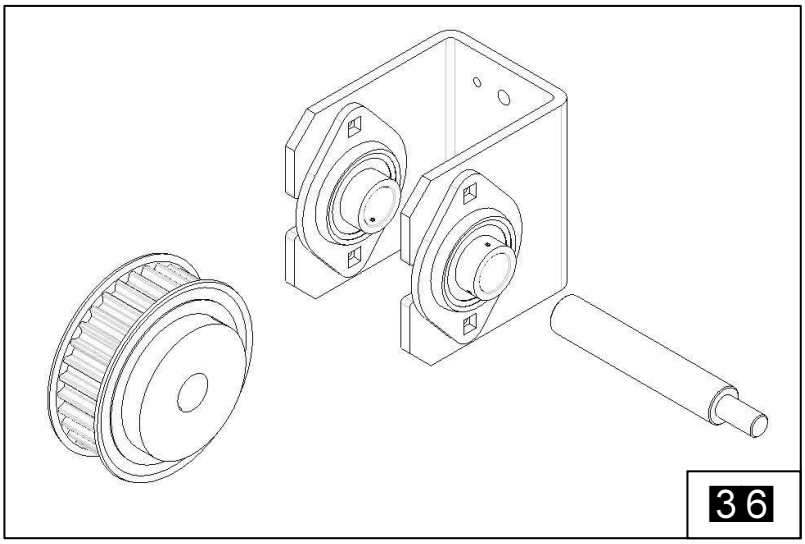
- If present, remove the encoder, by unscrewing the two screws that support the plate and loosen the clamps, as shown in the figure 34



- Unscrew the screws that fix the pulley support. 35



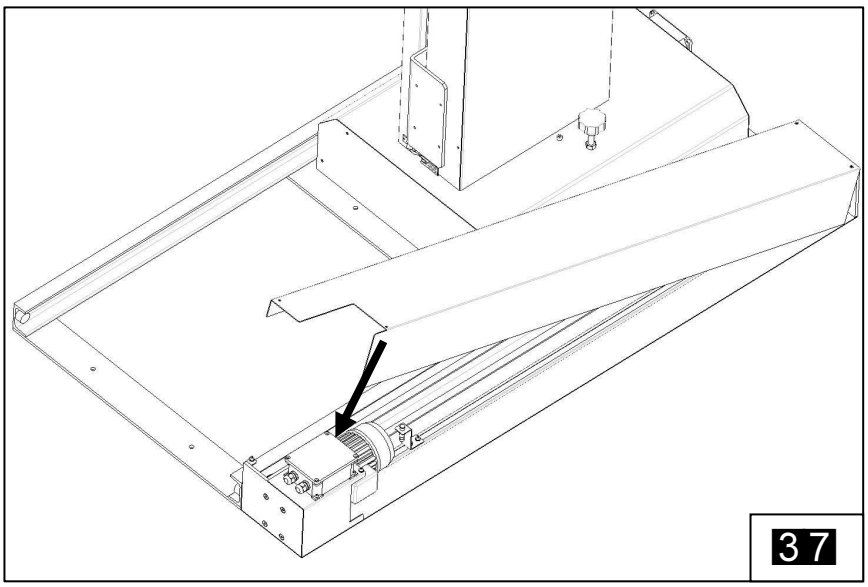
- Remove the pulley and the relative rod, by removing the support. 36



- Assemble the new pulley with its rod..

NOTE: the bearings are assembled in the pulley support.

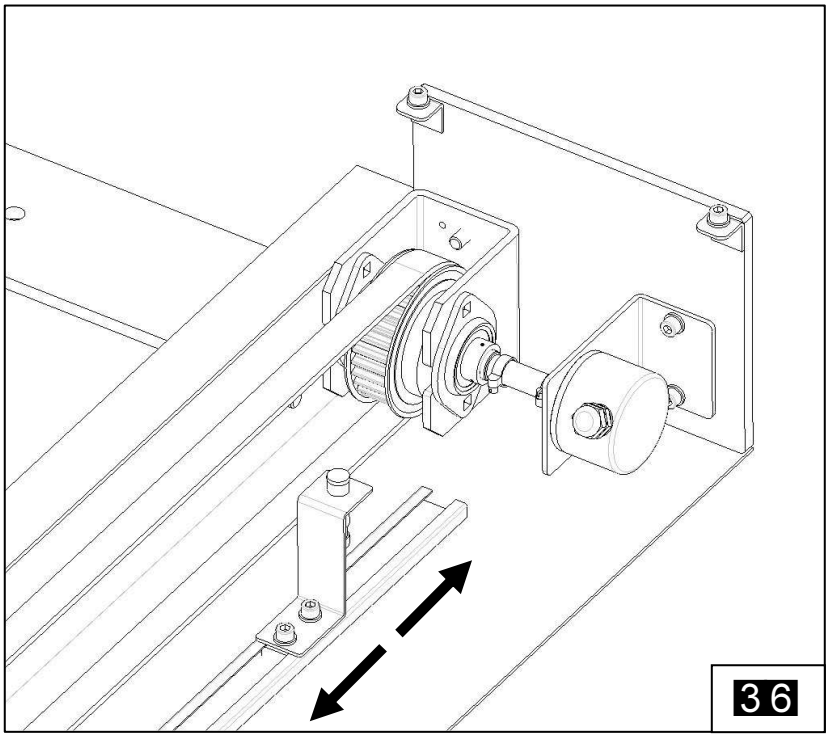
- If present, reassemble the encoder, following the reverse procedure.
- Place the toothed belt on the pulley.
- Adjust correctly the belt tension (see **paragraph 12.10**).
- Close the machine, reassembling the cover. 37



12.12 Adjustment of the maximum stroke

If not different defined in the order, the machine is supplied with stops and limit switches positioned at maximum stroke. In case of necessary changes, do as follows (as described in paragraph 12.7):

- Position the reciprocator in the middle of the z-axis
- Switch off the machine.
- Remove the cover.
- Unloosen the fixing screws of the support.
- Let the end of stroke group slides up to the new position. 36



NOTE: the position of the limit switches is described below:

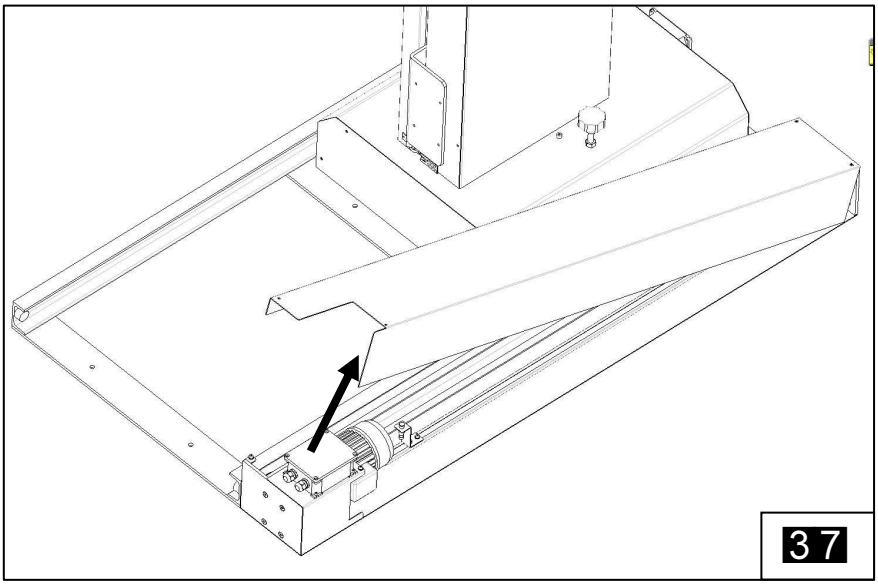
- germotor side: limit switch backward
- opposite side: limit switch forward

- Block the limit switch group, tightening the relative screws.
- Adjust the position of both limit switches.
- Reassemble the cover, by screwing the relative screws.

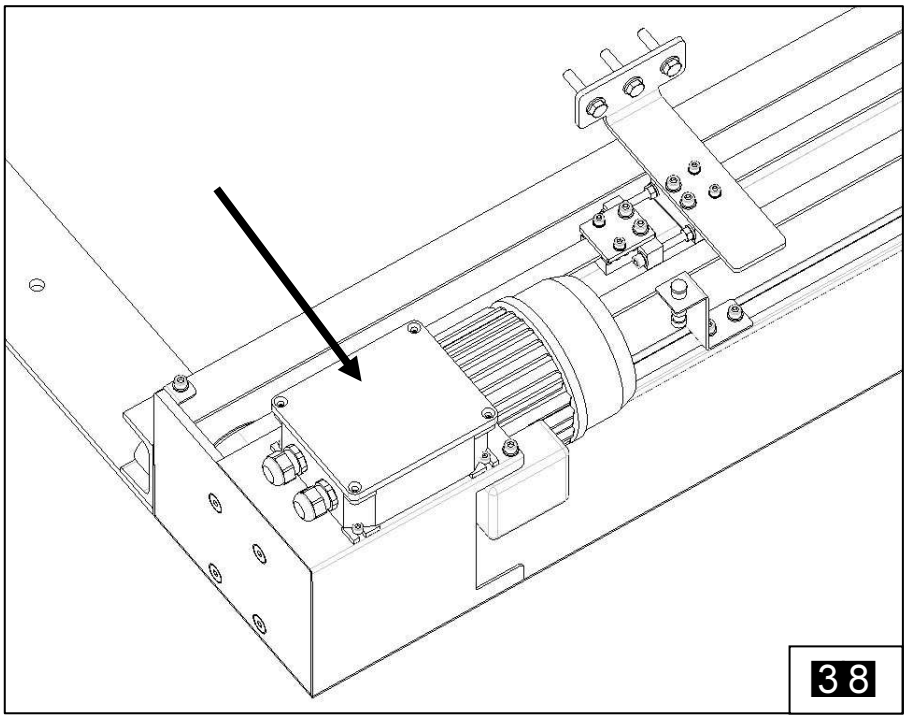
12.13 Replacement of the encoder (if present)

To replace the encoder, do as follows:

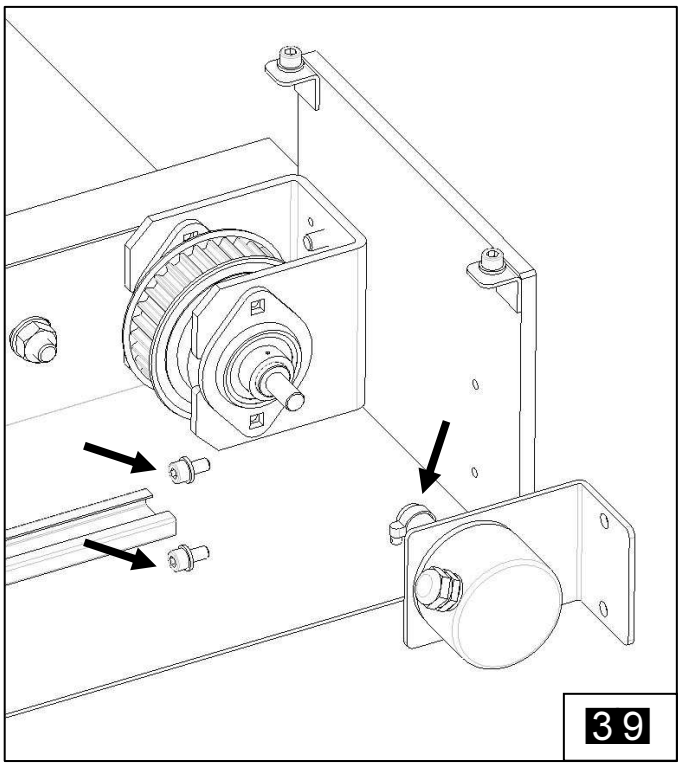
- Switch off the machine and remove the cover, by unscrewing the relative screws. 37



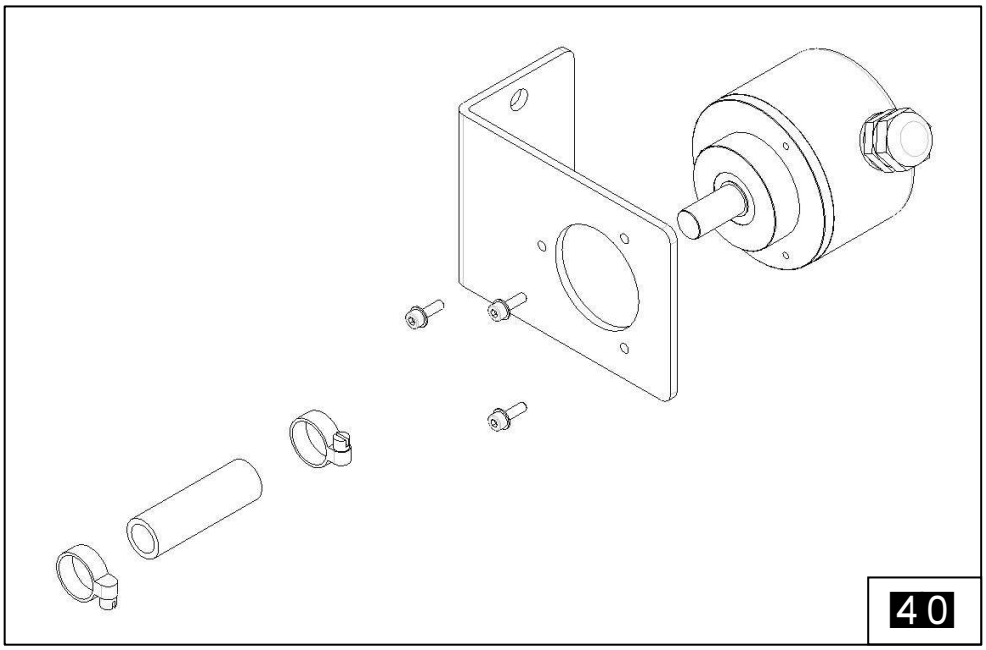
- Open the junction box and disconnect the encoder. 38



- Loosen the joint clamp near the encoder and unscrew the screws that fix the bracket, as shown in the figure 39 40



39



40

- Assemble the new encoder on the support, taking care to insert the shaft into the pipe of the joint and block it with the relative clamp
- Connect the encoder to junction box (see the wiring diagram).
- Close the junction box and the machine

13.0 ALARMS

ANOMALY	CAUSE	REMEDY
NOISE AND VIBRATIONS DURING THE STROKE	■ Worn-out wheels ■ Worn-out bearing of the wheels ■ Dirty rail	■ Replace the wheels (contact ***Nordson***) ■ Replace the bearing (contact ***Nordson***) ■ Clean the rail
STRONG HITS DURING THE MOVEMENT	■ Belt tension insufficient	■ Adjust belt tension
NOISE AT THE REVERSAL POINTS	■ Clearance of the gearmotor	■ Replace the gearmotor
LOSS OF STROKE REFERENCES	■ Breaking of the limit switches ■ Braking of the encoder	■ Replace the limit switches ■ Replace the encoder
ELECTRIC ANOMALIES		■ See the wiring diagrams

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 longer valid. Therefore ***Nordson*** declines each possible responsibility directly, indirectly or consequentially, about accidents occurred to operators, or about possible restrictions of productive performances of the machine.

- The safety and reliability of ***Nordson*** equipment is only guaranteed with the proper use of correct ***Nordson*** spare parts.

- 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 identify all information and guarantee safety during the interventions (safety and accident prevention measures).

14.2 How to order spare parts

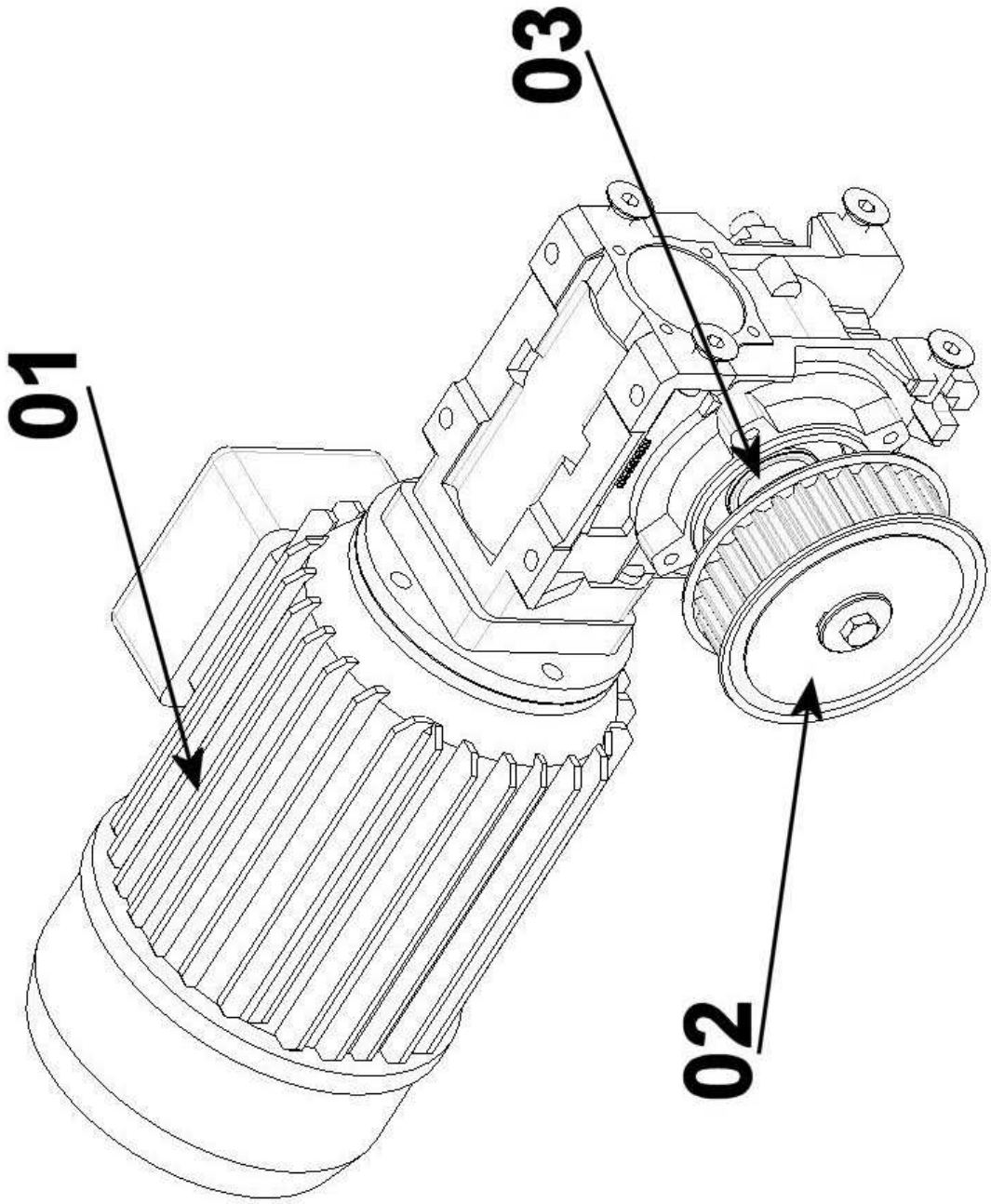
To order spare parts see the data on the CE plate.
The order will have to contain the following elements:

- Model/Type of machine
- Serial No.
- Description of the group
- Position no. of the spare parts
- Description of the spare parts
- Code of the spare part
- Quantity

Example:

- Z-axis mod. HBF
- Serial No. 99999
- Gearmotor group
- Position 01
- Gearmotor
- 7034376
- No. 2 Pcs.

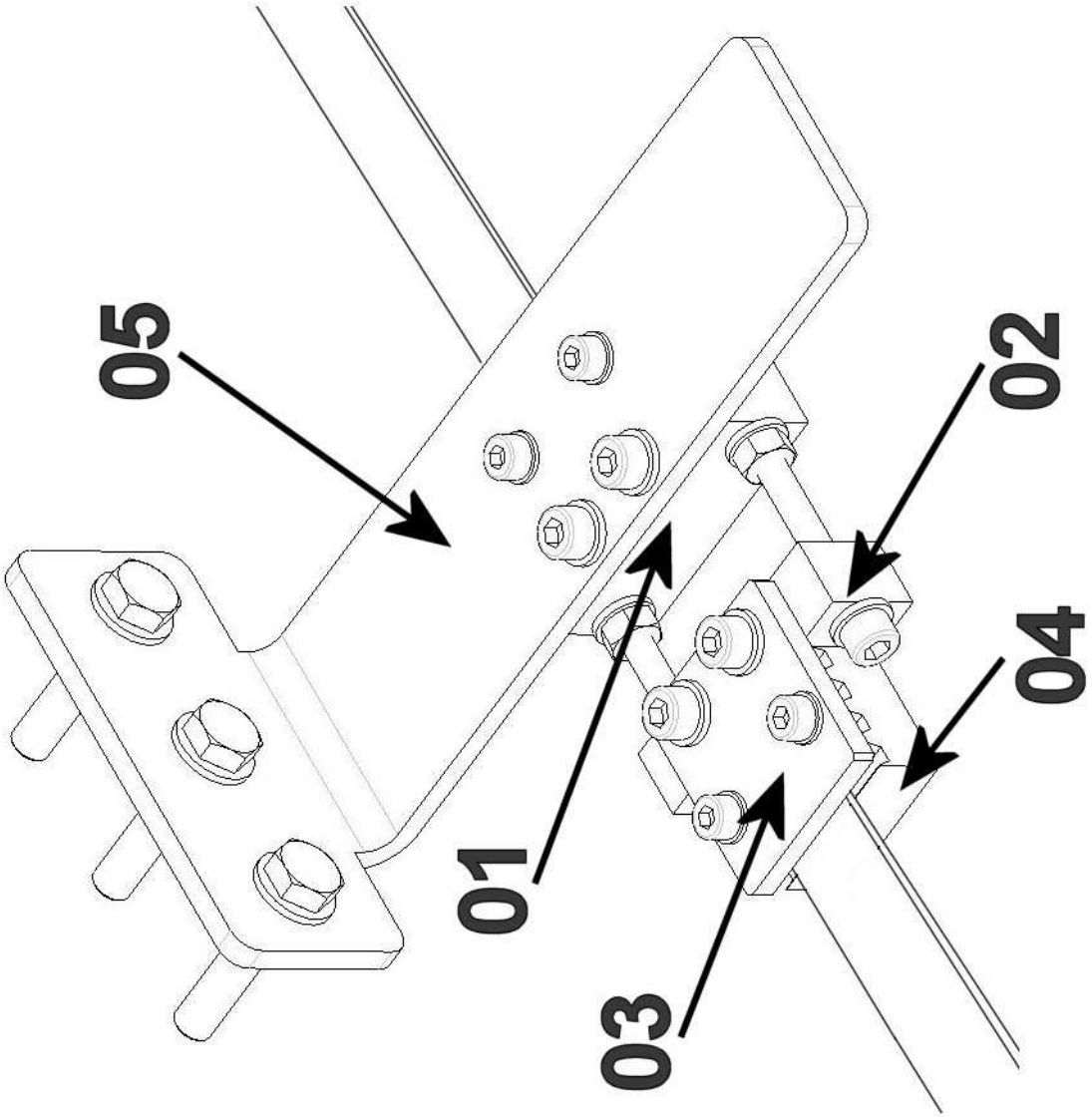
GEARMOTOR GROUP



GEARMOTOR GROUP

Pos.	Part Number	Qty	Description
1	7034376	1	Gearmotor, HBF
2	7034377	1	Driving pulley
3	7034378	1	Gearmotor shaft, HBF

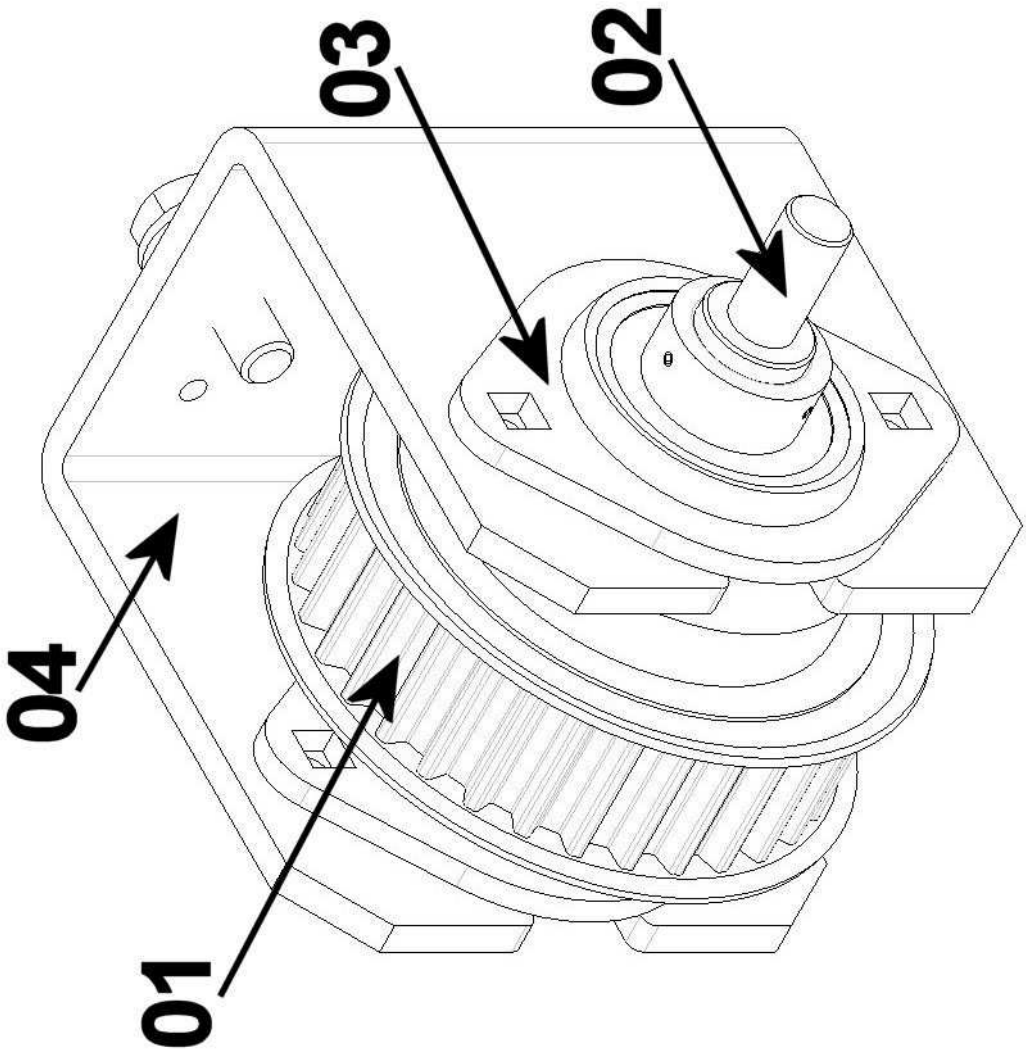
TIGHTENER GROUP



TIGHTENER GROUP

Pos.	Part Number	Qty	Description
1	736522	1	Fixed block
2	736524	1	Adjustable block
3	7034379	1	Belt fixing plate
4	736523	2	Belt fixing toothed plate
5	7034381	1	Fixing bracket

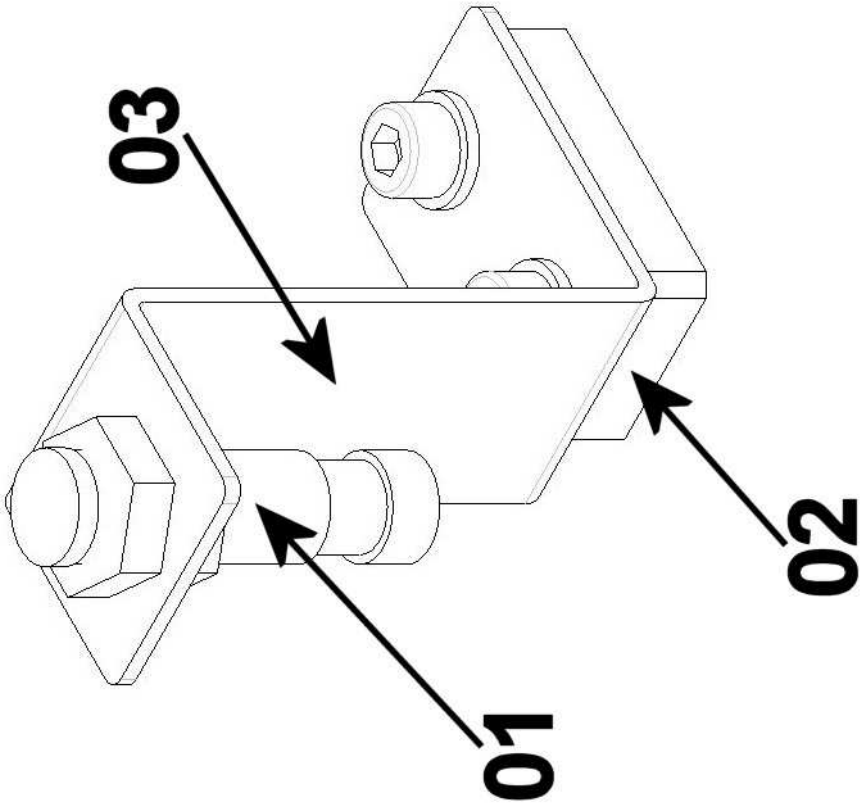
DRIVEN GROUP



DRIVEN GROUP

Pos.	Part Number	Qty	Description
1	7034384	1	Driven pulley
2	7034385	1	Shaft
3	7034332	2	Kit,2*bearing, top pulley
4	7034386	1	Bracket for driven pulley

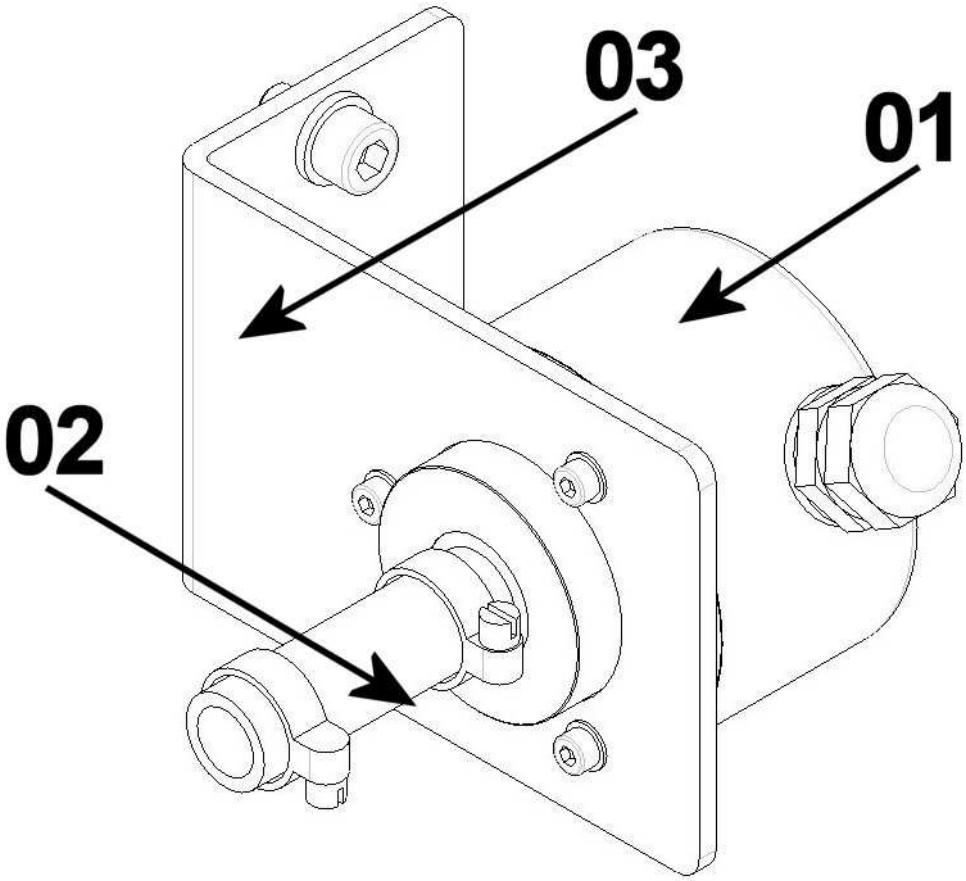
LIMIT SWITCH GROUP



LIMIT SWITCH GROUP

Pos.	Part Number	Qty	Description
1	736339	2	Sensor,inductive,PNP,NC 12mm
2	7034387	2	Fixing block
3	7034388	2	Bracket

ENCODER GROUP



ENCODER GROUP

Pos.	Part Number	Qty	Description
1	7034353	1	Encoder, HBF Series
2	736358	1	Coupling,sensor encoder,recip
3	7034389	1	Encoder bracket

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.

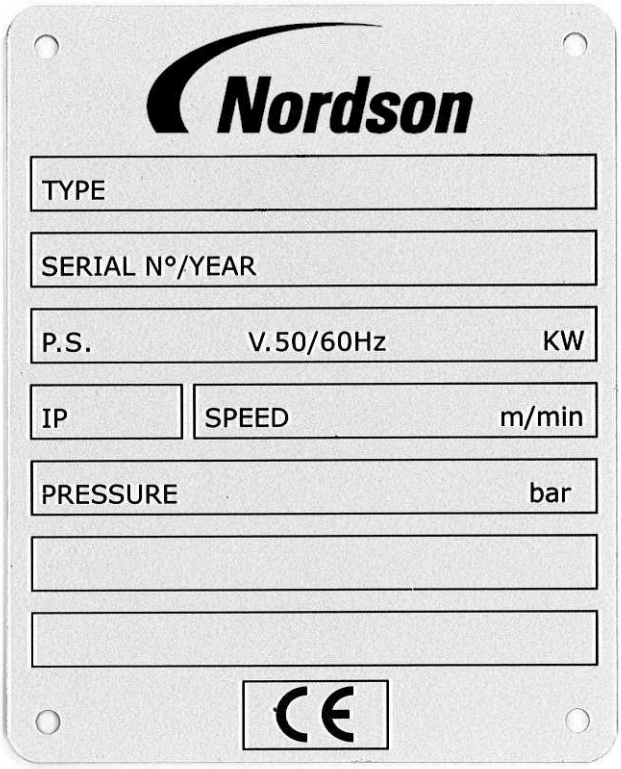
The dismantling of the machine and the removal of its components must be carried out according with the local laws or directives.

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)

16.0 ATTACHMENTS

CE PLATE


Nordson
TYPE
SERIAL N°/YEAR
P.S.
V.50/60Hz
KW
IP
SPEED
m/min
PRESSURE
bar
CE

CE DECLARATION

EC DECLARATION OF CONFORMITY

ACCORDING TO CE DIRECTIVE 2006/42/CE

DESCRIPTION	Z-axis mod. HBF Series
FAMILY/MODELS	All - for powder coating applications
APPLICABLE DIRECTIVES	Machinery Directive 2006/42/CE Electromagnetic Compatibility Directive 2014/30/EU Directive 2014/34/EU ATEX zone II 3D referred to equipment and protection systems which are used in the presence of explosive atmosphere
STANDARDS USED TO VERIFY COMPLIANCE:	UNI EN ISO 12100:2010
MARKING OF PRODUCT:	CE

The equipment delivered is generally intended to be part of a powder coating system, and can be operated on its own or in conjunction with other equipment.
In order to be in full compliance with the CE machinery directive and its amendments, the customer is obliged to respect the applicable regulations for his powder coating system upon incorporation of the equipment in the powder coating plant and before starting operation.

We hereby declare that the product specified conforms to the directives and standards described above and that it has been provided with a CE label. Provided the product is installed and operated in line with the Nordson manuals, its operation is safe.

Kai Flockenhaus
Manager Procurement & Process,
ICS Europe (Industrial Coating Systems)
Nordson Deutschland GmbH

Date: 23rd May 2016

EC DECLARATION OF CONFORMITY

ACCORDING TO CE DIRECTIVE 2006/42/CE

DESCRIPTION	Z-axis mod. HBF Series
FAMILY/MODELS	All - for liquid coating applications
APPLICABLE DIRECTIVES	Machinery Directive 2006/42/CE Electromagnetic Compatibility Directive 2014/30/EU Directive 2014/34/EU ATEX zone II 2G t3 referred to equipment and protection systems which are used in the presence of explosive atmosphere
STANDARDS USED TO VERIFY COMPLIANCE:	UNI EN ISO 12100:2010
MARKING OF PRODUCT:	CE

The equipment delivered is generally intended to be part of a powder coating system, and can be operated on its own or in conjunction with other equipment.
In order to be in full compliance with the CE machinery directive and its amendments, the customer is obliged to respect the applicable regulations for his powder coating system upon incorporation of the equipment in the powder coating plant and before starting operation.

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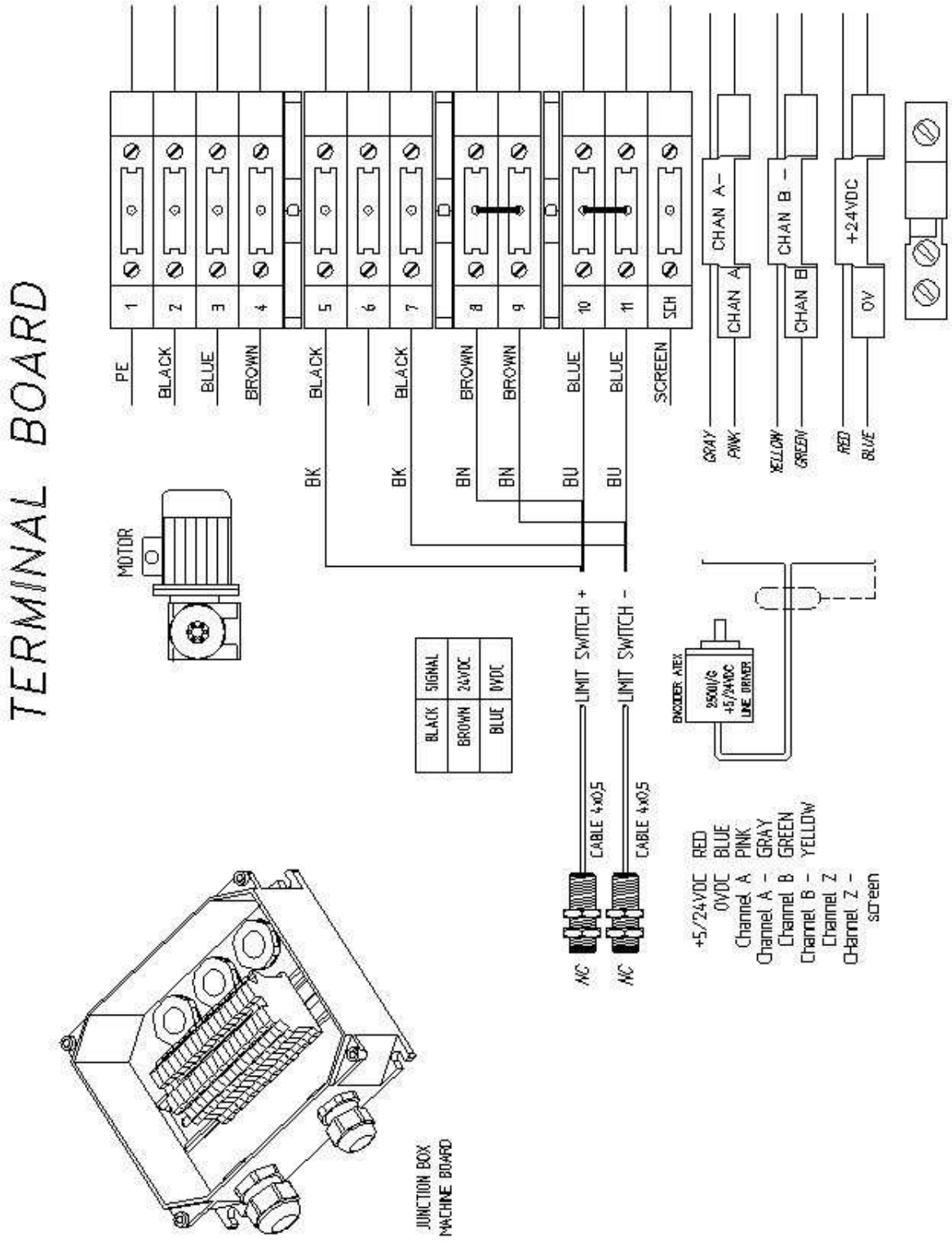
Kai Flockenhaus
Manager Procurement & Process,
ICS Europe (Industrial Coating Systems)
Nordson Deutschland GmbH

Date: 23rd May 2016

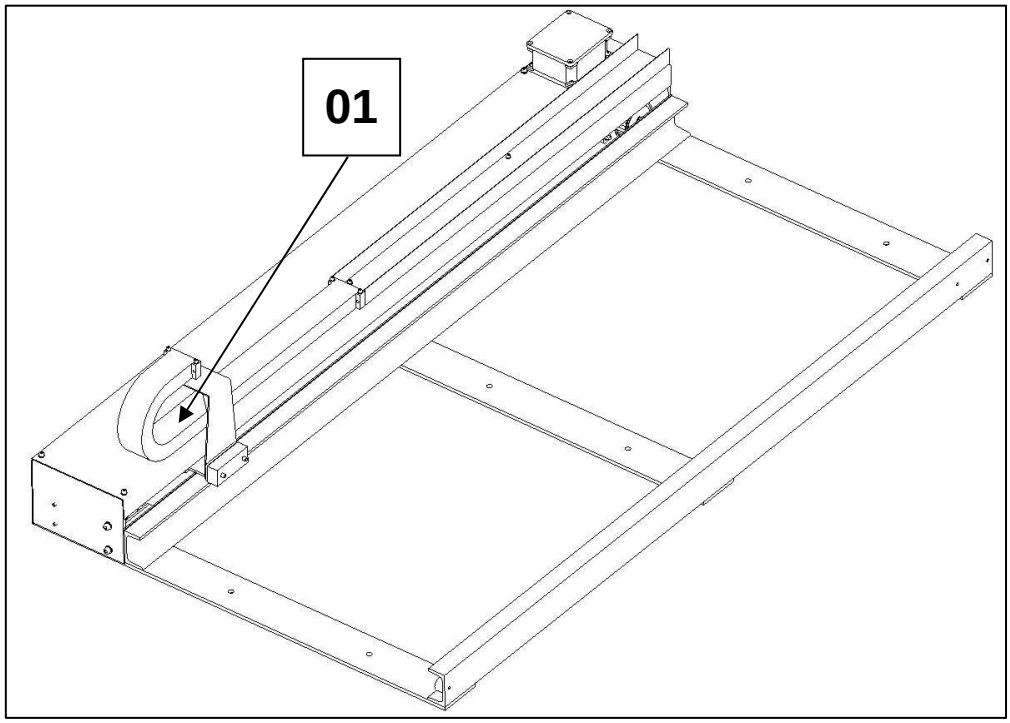
WIRING DIAGRAMS


TERMINAL BOARD
1
2
3
4
5
6
7
8
9
10
11
SCH
PE
BLACK
BLUE
BROWN
BLACK
BLACK
BROWN
BROWN
BLUE
BLUE
SCREEN
BK
BK
BN
BN
BU
BU
CHAN A-
CHAN A
CHAN B -
CHAN B
+24VDC
0V
GRAY
PINK
YELLOW
GREEN
RED
BLUE
MOTOR
BLACK
BROWN
BLUE
SIGNAL
24VDC
0VDC
LIMIT SWITCH +
LIMIT SWITCH -
CABLE 4x0,5
CABLE 4x0,5
NC
NC
ENCODER AXIS
2500I/G
+5/24VDC
LINE DRIVER
+5/24VDC RED
0VDC BLUE
Channel A PINK
Channel A - GRAY
Channel B GREEN
Channel B - YELLOW
Channel Z
Channel Z -
screen
JUNCTION BOX
MACHINE BOARD

RECOMMENDED OILS

	6) °C -50 0 +50 +100	DIN (ISO)	ISO,NLGI	Mobil® Mobil	Shell Shell	KLÜBER LUBRICATION Klüber	TEXACO TEXACO	Castrol Tribol	Castrol Optimol	FUCHS FUCHS	TOTAL TOTAL
R... K... F...	Standard -20 +60	CLP HC	VG 220	Mobil SHC 630	Shell Omala S4 GX 220	Klübersynth GEM 4-220 N	Pinnacle EP 220	Tribol 1510/220	Optigear Synthetic X 220	Renolin Unisyn CLP 220	
	4) -40 +40	CLP HC	VG 150	Mobil SHC 629	Shell Omala S4 GX 150	Klübersynth GEM 4-150 N	Pinnacle EP 150		Optigear Synthetic X 150	Renolin Unisyn CLP 150	Carter SH 150
	4) -40 +20	CLP HC	VG 68	Mobil SHC 626	Shell Omala S4 GX 68					Renolin Unisyn CLP 68	
	4) -40 0	CLP HC	VG 32	Mobil SHC 624		Klüber-Summit HySyn FG-32	Cetus PAO 46		Optileb HY 32	Renolin Unisyn OL 32	Dacnis SH 32
S...(HS...)	Standard -20 +60	CLP HC	VG 460	Mobil SHC 634	Shell Omala S4 GX 460	Klübersynth GEM 4-460 N	Pinnacle EP 460		Optigear Synthetic X 460	Renolin Unisyn CLP 460	
	4) -40 +30	CLP HC	VG 150	Mobil SHC 629	Shell Omala S4 GX 150	Klübersynth GEM 4-150 N	Pinnacle EP 150		Optigear Synthetic X 150	Renolin Unisyn CLP 150	Carter SH 150
	4) -40 +20	CLP HC	VG 68	Mobil SHC 626	Shell Omala S4 GX 68					Renolin Unisyn CLP 68	
	4) -40 0	CLP HC	VG 32	Mobil SHC 624		Klüber-Summit HySyn FG-32	Cetus PAO 46		Optileb HY 32	Renolin Unisyn OL 32	Dacnis SH 32
R...,K...(HK...), F...,S...(HS...)	Standard -10 +40	CLP HC NSF H1	VG 460			Klüberoil 4UH1-460 N			Optileb GT 460	Cassida Fluid GL 460	
	-20 +30		VG 220			Klüberoil 4UH1-220 N			Optileb GT 220	Cassida Fluid GL 220	
	4) -40 0		VG 68			Klüberoil 4UH1-68 N			Optileb HY 68	Cassida Fluid HF 68	
	-20 +40	E	VG 460		Shell Naturelle Gear Fluid EP 460	Klüberbio CA2-460				Plantogear 460S	
W...(HW...)	Standard -20 +40	SEW PG	VG 460 1)			Klüber SEW HT-460-5					
	-40 +10	API GL5	SAE 75W90 (~VG 100)	Mobil Synth Gear Oil 75 W90							
	-20 +60	CLP PG NSF H1	VG 460 2)			Klübersynth UH1 6-460					
PS.F..	Standard -20 +80	CLP PG	VG 220			Klübersynth GH-6-220					
	-20 +60	CLP PG NSF H1	VG 460 2) 3)			Klübersynth UH1 6-460					
	4) -40 0	CLP HC	VG 32	Mobil SHC 624							
BS.F..	4) -20 Standard +60	CLP PG	VG 220			Klübersynth GH 6-220					
	-20 +60	CLP PG 460 NSF H1	VG 460 2) 3)			Klübersynth UH1 6-460					

17.0 PERSONALIZATION/SPECIAL EXECUTIONS



Pos.	Part Number	Q.ty	Description
01	7034390 7034391	1 1	Kit energy chain for HBF stroke 1.000 mm (130.2005.10) Kit energy chain for HBF stroke 1.500 mm (130.2005.15)

17.2 Spare parts for ATEX zone 1-II 2 G t3

Part Number	Description
7034382	Toothed belt HBF10 (120.2000.10)
7034383	Toothed belt HBF15 (120.2000.15)
736178	Limit switch sensor (310.8276)
7033103	Encoder (310.8065.01)
736358	Coupling,sensor encoder,recip (120.0002)
7034376	Gearmotor (400.0002.03)