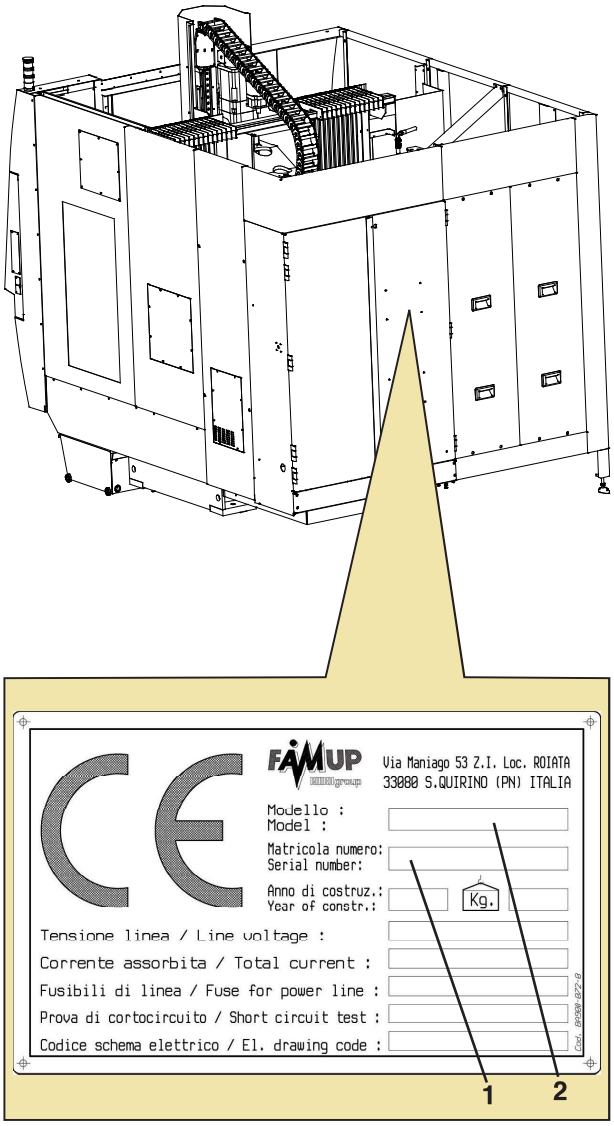
A Machine installation

Accepting delivery of the machine

Check that the machine has not been damaged during transport and that the supply is complete. If defects are observed, please contact the seller and/or the insurance company immediately.

In case of complaints and/or subsequent orders for spare parts or accessories, always mention:

- the machine's serial number,
- the power system's serial number,
- the keyboard's serial number
- the software version.

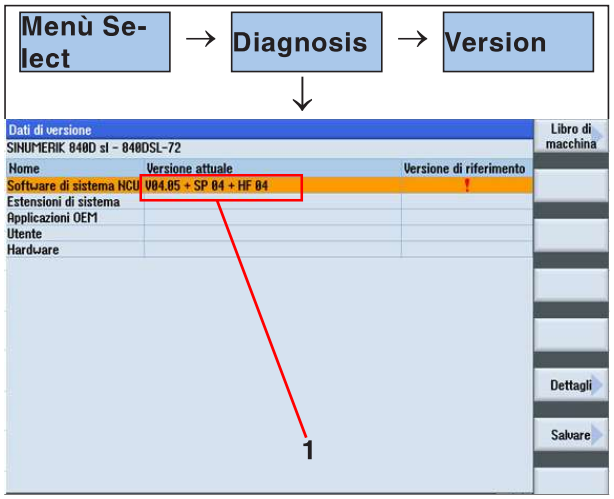


Machine's serial number (1) and model (2)

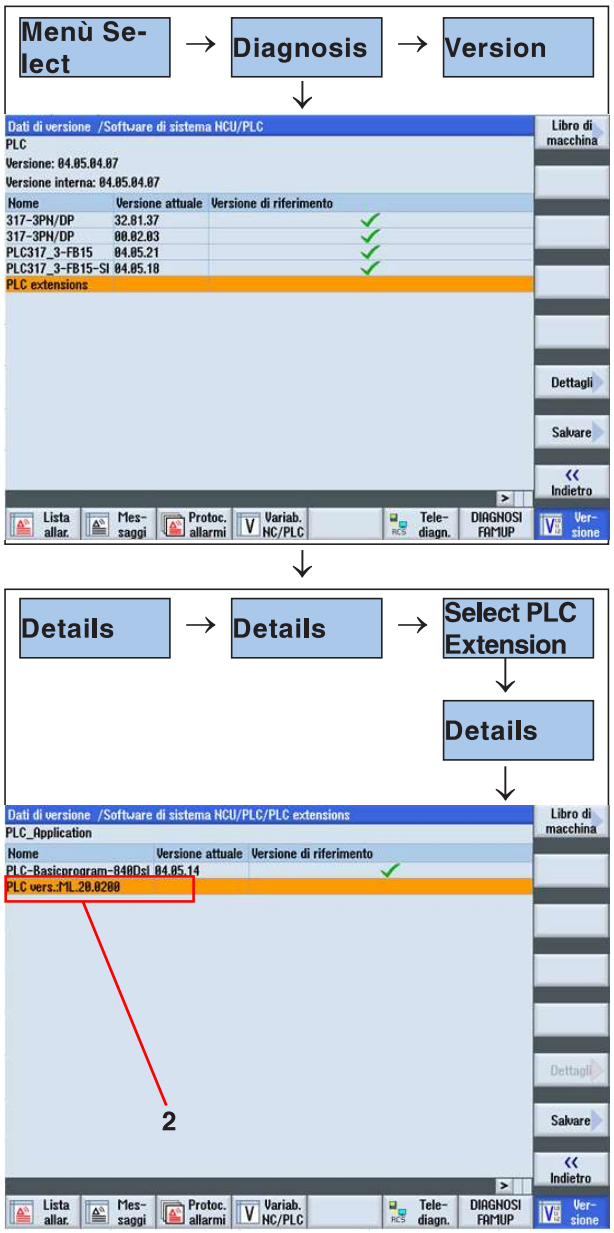
Machine's serial number and power system's serial number

On the side of the unit, above the main switch , there is a tag showing the model of the machine (2), its serial number (1) and the power system's serial number.

Note:
The power system's documentation is inside the electric cabinet of the machine, includes the current electrical diagrams.



How to find the number of the Siemens software



How to find the number of the EMCO (PLC) software

Software- Sinumerik serial numbers

In order to be able to identify the Sinumerik software of your machine exactly, three numbers are required:

- The number of the numerical control software (1).
- The number of the EMCO software (2)

Siemens software serial numbers

Go to the screen page showing the required number by pressing the appropriate softkeys.

Serial number of the Siemens numerical control software (1).

Menu Select /Diagnosis/Version

EMCO (PLC) software serial number

The screen page of the control system where the version of the EMCO (3) software is shown can be recalled by entering the key sequence shown here. The number is shown in the last line of this menu view.

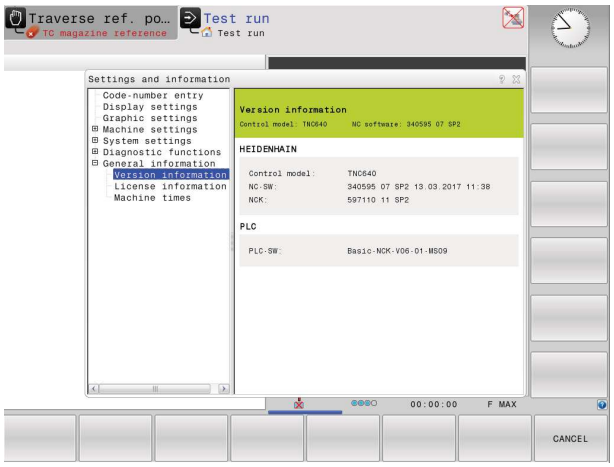
Scroll down with the PAGE DOWN key.

Software numbers

In order to identify the Heidehain software of your machine two numbers are necessary:

- CN software
- PLC software





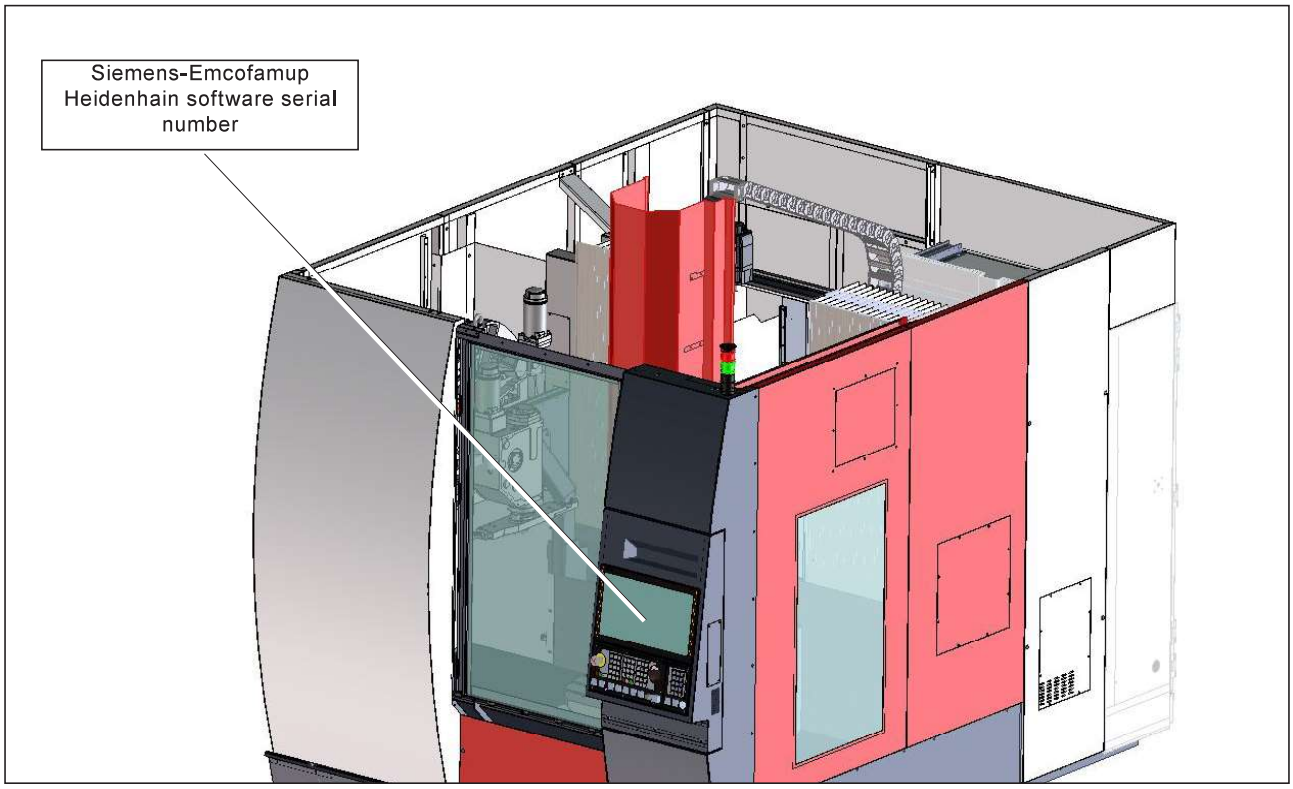
Viewing the software numbers

Viewing the software numbers

- Select the "Test program" mode and the MOD function.
- A window shall open on screen, with the instructions for this command. Select:

  - GENERAL INFORMATION > SW VERSION

- Note down the two numbers in case you need to ask questions to the EMCO FAMUP customer service.



Input the specific number for the machine and the control here!

Machine configuration

Basic model

- Vertical machine centre, including 40-slot tool magazine
- Control system
- Pneumatic system
- Cooler system
- Central lubricating system
- Machine's internal lighting
- Piece counter
- User's manual and power system's documentation
- 15000rpm electrospindle
- Pressurised optical lines on the X-Y-Z axles

Modules

(according to version)

☐ SINUMERIK 840D sl control system
☐ Heidenhain iTNC640 control system

Optional:

☐ 60-slot tool magazine
☐ Chip conveyor
☐ Piece washing gun
☐ Status warning lamp
☐ Electrical cabinet air conditioner
☐ Measuring cycles with probe
☐ Presetting laser
☐ Cooling through the spindle at 20 bar
☐ Air-water cooler supply through the spindle
☐ 4-way rotating joint at the centre of the table
☐ Paper filter
☐ Rotoclear on front door
☐ Total work area covering
☐ Front door automatic opening
☐ Precision encoder in the rotation axles

Machine handling

The machine can be transported with the following vehicles and packaging:

- crated and hoisted with ropes and a crane
- with a forklift, no pallet

General guidelines

- Make sure that any handling equipment (crape, ropes, ecc.) that is used is big enough and suitable for the weight to be carried.
- Always use handling equipment in compliance with the safety requirements of directive 2006/42/CE.
- Use lifting systems fitted with a safety hook.
- Before moving the machine make sure any moving part is secured.
- Make sure that the equipment is always balanced, otherwise it may fall off the handling equipment.
- When handling and positioning the equipment on the floor make sure warning signs are affixed in the area.
- Make sure that the weight is distributed evenly between the lifting points and that the ropes are tensioned evenly.
- When lifting components that are not packaged make sure that the ropes do not rub against delicate parts or components when tensioned.
- NEVER use the point of the hook to lift the machine.
- Make sure the ropes, the shackles and the eyebolts are in good conditions. Replace them if they look cracked or ravelled.
- Keep the machine as close to the floor as possible when moving it.
- Do not perform unusual movements that could affect the machine or its internal components.

Caution:
When moving, lifting and installing the machine the operator must wear protective gloves, shoes and helmets in compliance with the current law.

Caution:
The equipment may be moved only if all material or fluids have been removed from it.

Important:
Moving and installation must be carried out by skilled staff only, that is to say, technically trained operators with a thorough knowledge of the machine.

Forklift handling

Warning:
- The lifting points and the fork dimensions must be complied with, in order to avoid deformations of the machine's riser.

Lifting load ..... min. 9000 kg
Distance "B" ..... 1500 mm
Distance "C" ..... 1200 mm

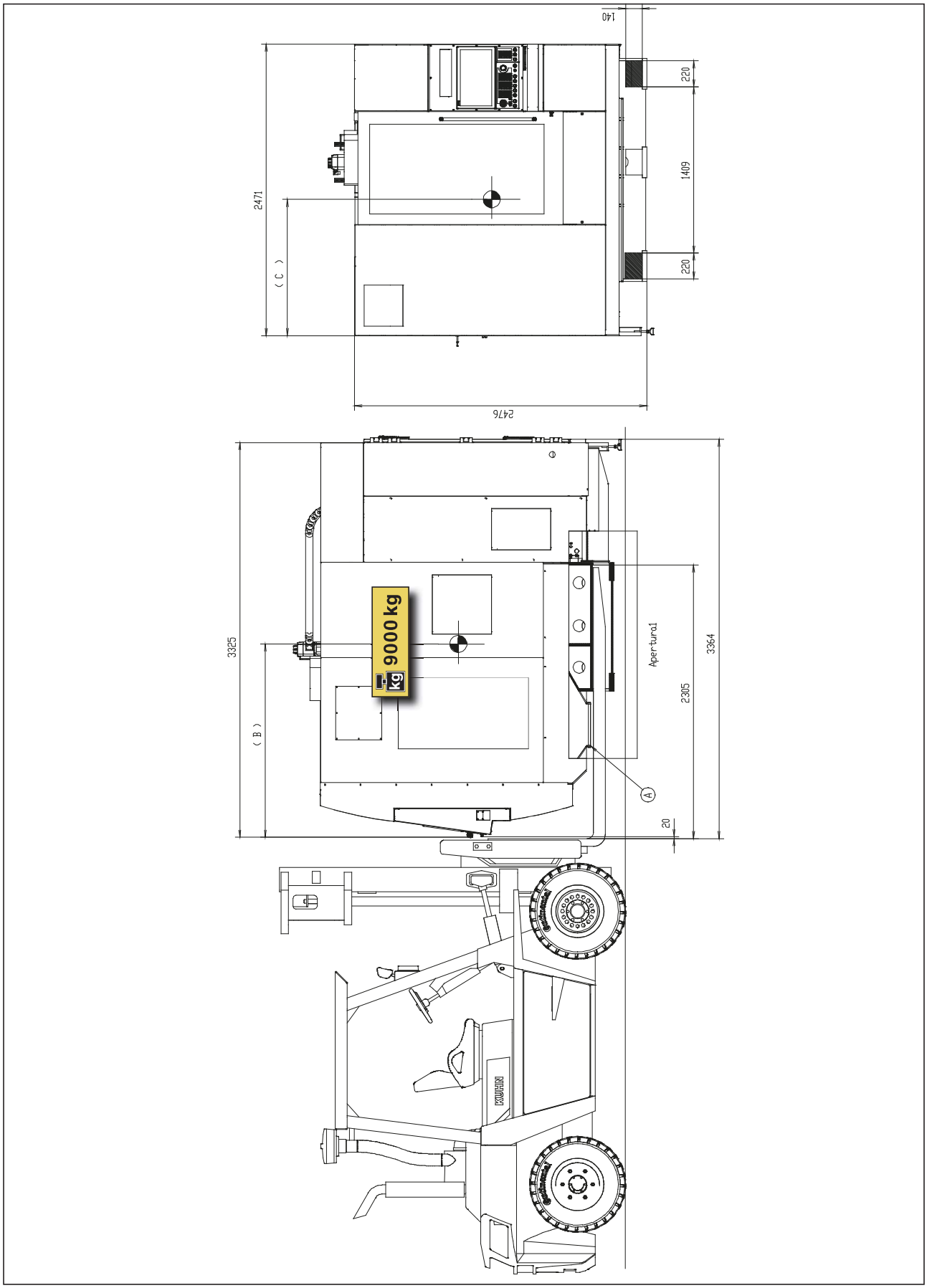
NOTE:
- Weight and centre of gravity details may vary according to the specific configuration of the machine.

Handling the machine with a forklift

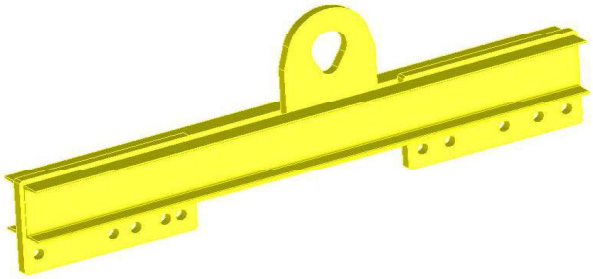
1. In lifting the machine please take care not to bump against the control panel.
2. Disassemble the rubber profiles (A) from the bottom of the base before lifting the machine.
3. Before starting to move the machine, check that the axes are locked with the relevant locking devices (see paragraph “Locking devices to be used for transport").

Important:
- Forklifts must always be driven at low speed, to prevent the load from becoming unbalanced due to bumps or floor unevenness.
- The floor must be flat and without dips, obstacles and hindrances.
- The forklift driver shall always assess the environmental conditions and operate in accordance with the provisions of the regulations on safety in teh workplace from time to time in force.

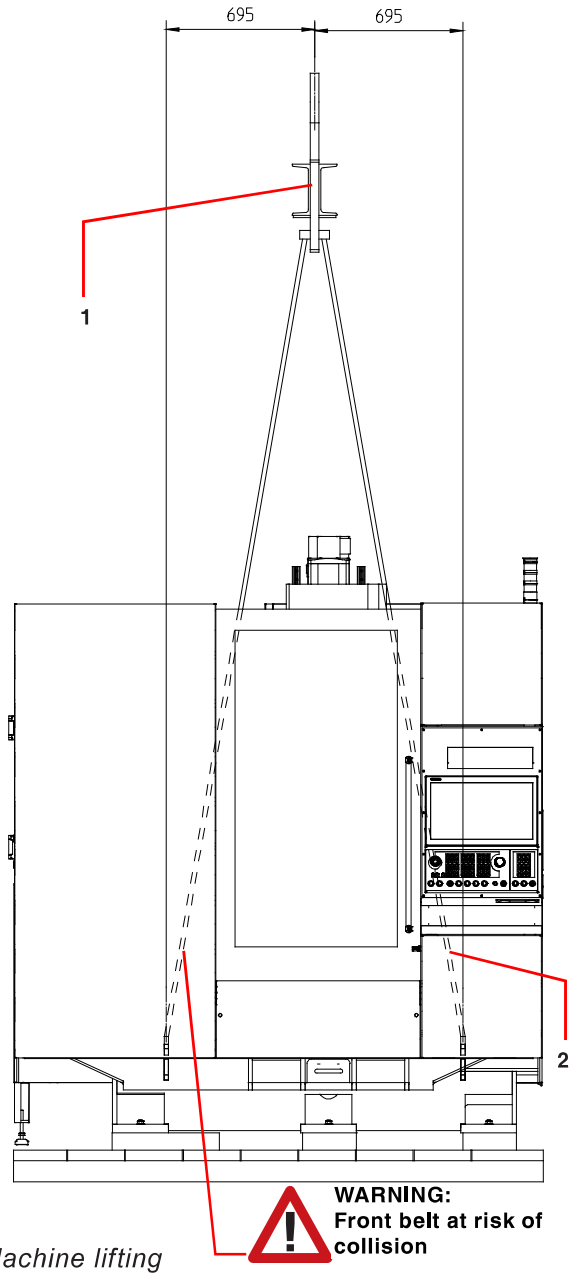
NOTE:
- The picture of the forklift is purely indicative.
- The size of the forklift must be chosen according to the load to be transported.



Size for forklift transportation



Lifting equipment (A) - indicative picture



Machine lifting

Crane handling

The machine must be lifted and moved only using the lifting equipment (figure ref. A) described below (please contact the manufacturer for information on the relevant characteristics) and following the instructions provided.

Important:
The manufacturer waives any and all responsibility for damages and/or injuries caused by the use of devices unsuitable for the lifting and handling of the machining centre.

Warning:
When lifting the machine keep your hands AWAY from parts of the machine where the ropes are going to be hooked.

Hoisting devices characteristics

1. Lifting frame:
   weight: 440kg
   capacity: ..... 15t (c.a.)
2. Hoisting band, complete with connectors (min. load 60kN, L3m)

NOTE:
- the hoisting devices are not included in the supply.

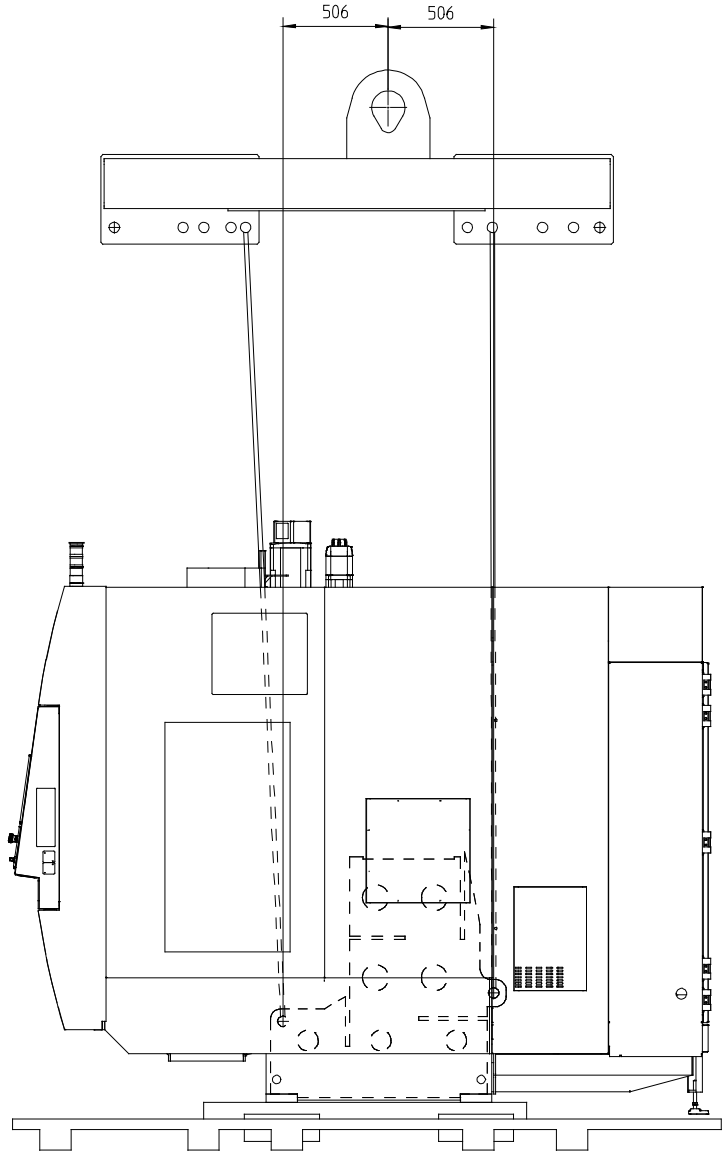
Warning:
- all staff members shall be required to leave the handling area.
- it is forbidden to stand or pass next to the machine when it is lifted high or is being lifted.
- EMCO FAMUP waives all and any liability for the improper use of the hoisting equipment and for using the wrong procedures.
- all the hoisting devices must be certified in compliance with the regulations from time to time in force.
- the owner of the equipment is liable for the regular maintenance of the various devices.
- the user is liable for checking the conditions of the equipment before carrying out all the activities.

Machine handling with overhead crane procedure

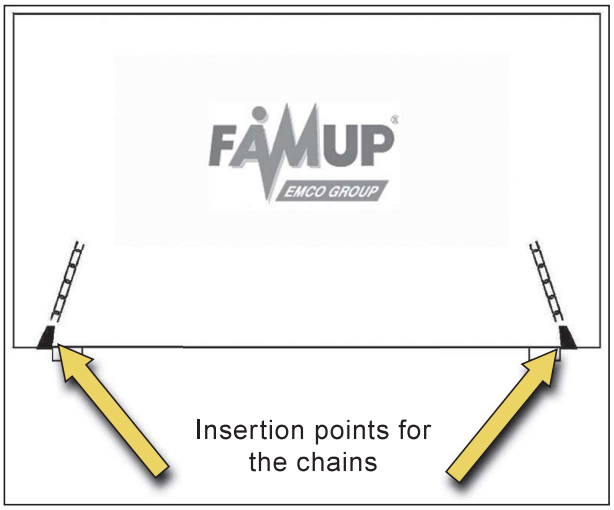
- Machine mass:..... 9.000kg.
- Hoisting devices weight: ..... .see drawing.

Proceed as follows:

1. check that the screws fastening the connectors used to hoist the machine are tightened correctly.
2. Before lifting check that the magazine cover is not installed and that there is no interference between the machine and the hoisting devices.
3. Lift he load slowly, checking that the machine is well balanced (no rotation allowed).



Machine lifting



Crate handling

Crate handling

The wooden crate is lifted by passing chains beneath the crate where the metal reinforced parts are (they are appropriately highlighted):

Packaging removal

The user must extract the components as follows:

1. Remove the packaging materials and extract the various parts lifting them vertically;
2. Remove the fastenings to the pallet (if any are present);
3. Lift the load vertically and move it to the unloading area, trying to avoid its swinging during the move.

Storing the equipment

If the machining centre is not to be installed as soon as it is purchased, make sure it is stored in a dry and well aerated room.

- Apply a suitable protective coating to parts of the equipment that are subject to oxidation and corrosion.
- Check frequently for signs of oxidation.
- Rubber components must be protected from very low temperatures and may not be stored outdoors, not even for short periods of time. Keep rubber components well aerated if the storage environment is hot.

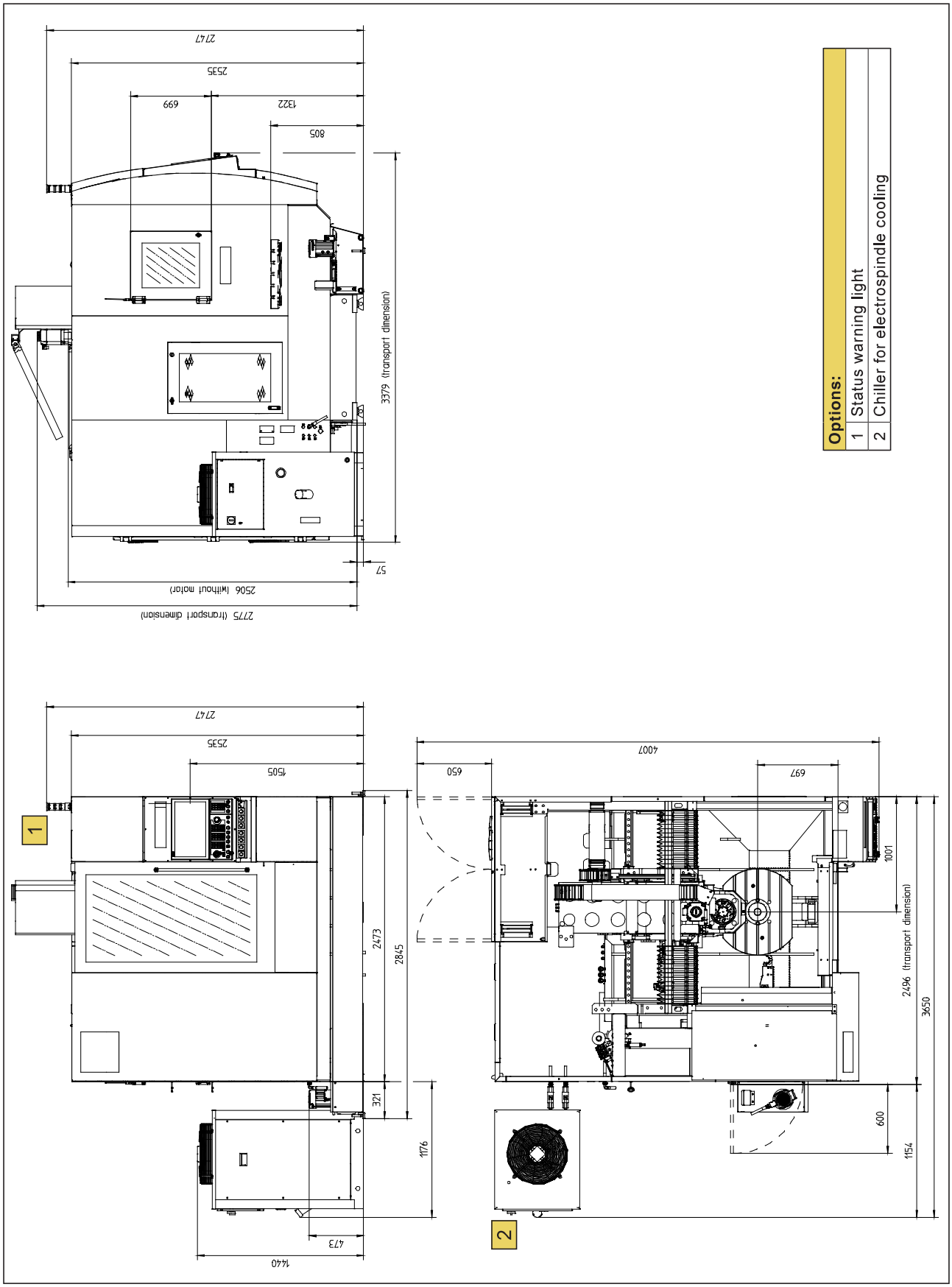
Caution:

- In case of prolonged warehousing, idleness after a period of operation or considerable delay in the commissioning of the plant after shipping, some gaskets or sealing rings might harden up, leading to leaks or seizure.
- If the machine has not been used for more than 6 months it should be checked and inspected entirely, and all seals or other components that may have deteriorated should be replaced.
- This operation is to be carried out by competent and qualified personnel, so as to prevent damage to the equipment when it is started up again.

Ensure that:

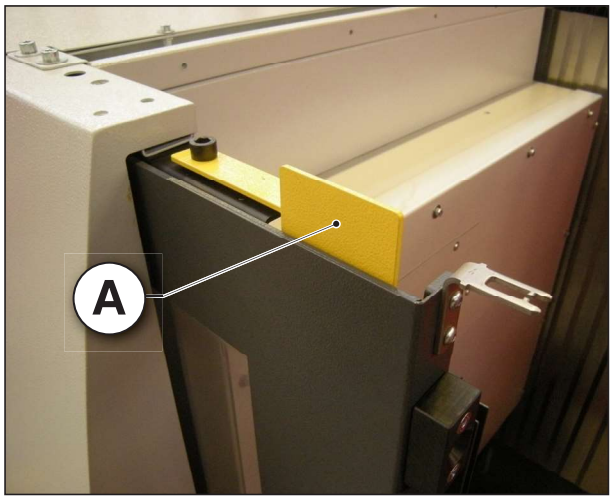
- there is no dripping from the iron structures;
- there is no possibility of damages occurring due to the passage of equipment, goods or people next to the machine;
- the system's components are always sheltered from rain and humidity and that they are not stored outside of the plant for any reason.

Installation template – Machine dimensions



Stops to be used during handling

Caution:
- Take away all handling stops before starting the machine.
- Keep all the handling stops, to be used again if the machine needs moving.



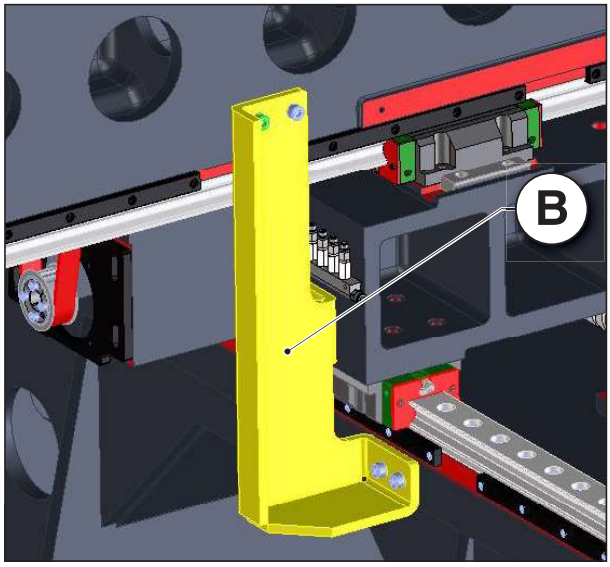
A handling stop - Machine door

A handling stop / Machine door

The chip protection door is fastened with the A stop, that prevents it from closing during handling.

- Remove the fastening screw together with the door stop device (A).

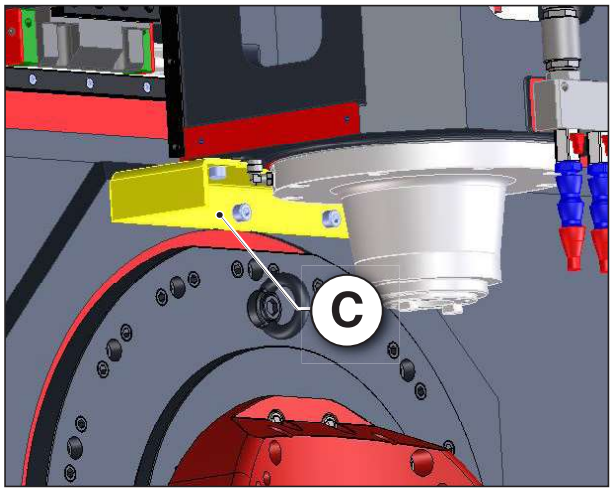
Note:
The machine is additionally blocked by an extra door safety switch!
Unblocking can occur only when the machine is in operation (connected to the mains power!).



B handling stop / X and Y skids

B handling stop / X and Y skids

The B handling stop is used to fix the position of the X and Y skids during the handling of the machine. In this way the machines centre of gravity is anchored. It is necessary to ensure that the machine be handled only when the handling stop is in place.



C handling stop/ Z axle

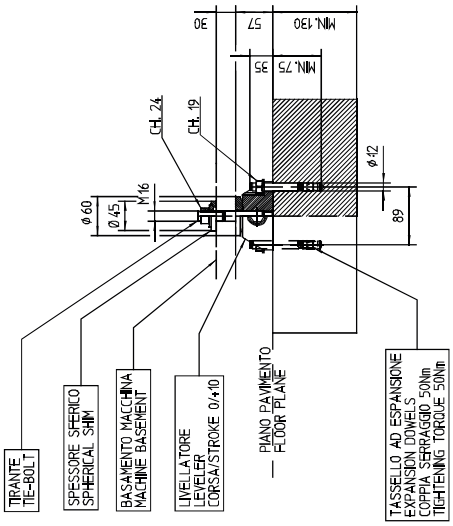
C handling stop/ Z axle

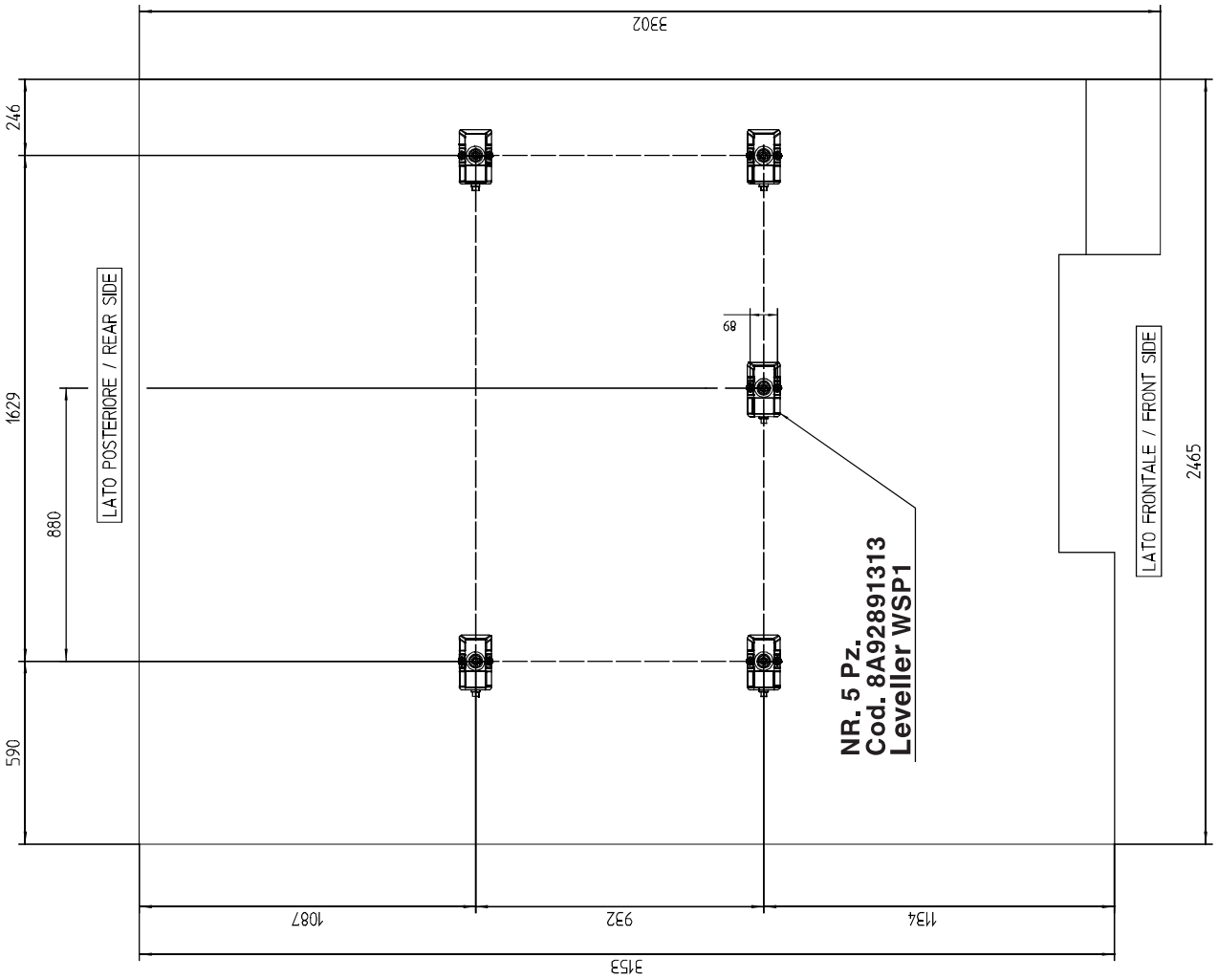
The C handling stop is used to anchor the position of the Z axle during the handling of the machine.

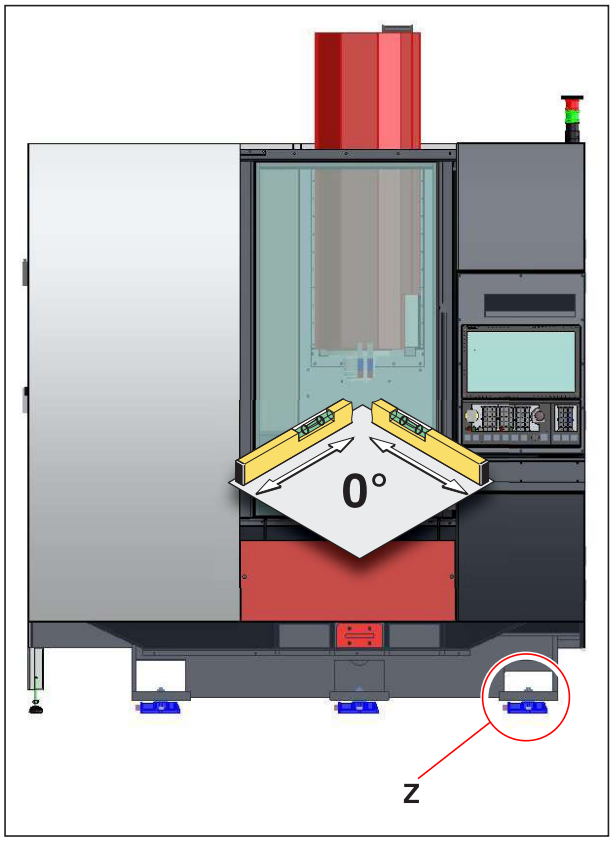
Boring template

PMINIMUM CAPACITY FOUNDATIONS FLOOR: 20 kg/cm^2
MINIMUM GROUND CAPACITY: 3 Kg/cm^2

FOR SOILS THAT CANNOT SUPPORT THE MINIMUM VALUE, INCREASE THE WORKING SURFACE ON THE GROUND (300x300 mm STANDARD FOR 3 Kg/cm^2)







Machine alignment

Installation criteria

Installation requirements

The machine must be installed on a floor that is as smooth as possible, with adequate load bearing capacity and able to absorb vibration, in order to guarantee maximum stability.
If the lower part of the machine needs to be screwed in place, it shall be necessary to bore the holes for the anchoring screws.

Operating conditions

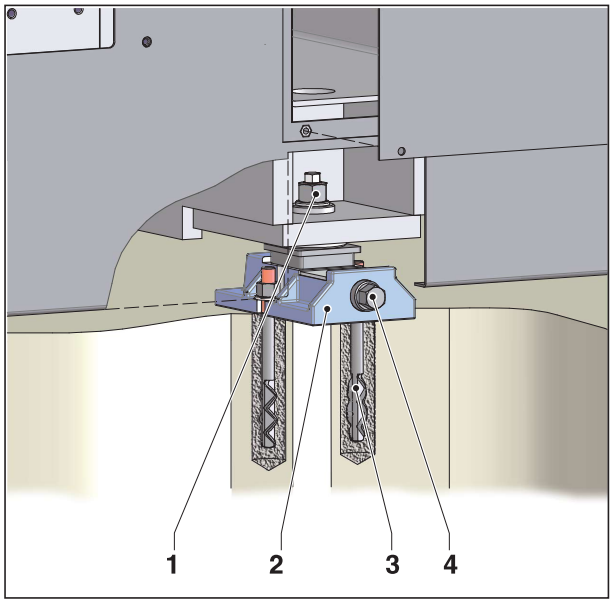
EMCO machines must be installed in a place with a room temperature falling between +10°C and 35°C.

Otherwise it is not possible to guarantee

- the precision working described
- machine functioning
- machine duration.

Floor fastenings

Note:
The machine must be anchored to the floor by means of stabiliser feet with toggle bolts.



Detail Z: floor fastening

The levelling elements are included in the basic model supply (n°5 levelling elements, complete with toggle bolts).

- Punch the holes according the "Punching diagram" shown in the previous pages.
- Lock the toggle bolts (2 for each levelling foot) in the holes.
- Mount the levelling feet (2) paying attention to the position of the toggle bolts (3) and lock them in place with the relevant nuts
- Place the machine on the levelling feet and align it with the calibration screws (4), maximum stroke 10mm.
- Anchor the machine by locking the nuts on the levelling feet (1).

Additional installation criteria

Besides possessing the required load bearing capacity and the ability to absorb vibrations in order to guarantee a stable installation, the surface and/or place of installation must satisfy some other requirements.

- The place of installation must comply with the requirements issued by the Civil Engineering Department (Genio Civile), so as to avoid pollution due to leaks of cooling lubricants, lubricating oil or hydraulic oil.

  The ideal condition would be an installation area that is at the same time a collection tank.

- Moreover, the installation area must be well ventilated. For this purpose, please comply with the safety on the workplace regulations (the authorised MAK and TRL values must not be exceeded).

- The vibration dampening characteristics must be the best, in order to reduce the transmission of vibrations to nearby objects (especially in the case of processing cycles in the high number of revolutions range; bar processing, processing of very irregular pieces, in case of interrupted sections, when power tools are used).

- The work station must be well lighted, in order to acquire familiarity with the machine and improve the quality of production.

- Unfavourable lighting and/or sun radiation can reflect off the screen of the control system, thus impairing the visibility of information.

- It is especially necessary to take into account the noise level that the machine operator can tolerate.

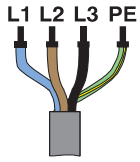
- Ensure that the machine is entrusted to highly skilled staff, according to the work situation, who shall be required to carry out highly sophisticated programming and control operations.

  It is sometimes possible to improve the situation using sound-proof enclosures.

  It has been ascertained that by doubling the distance from a nearby source of noise it is possible to reduce the sound level by 3 to 5 dB(A).

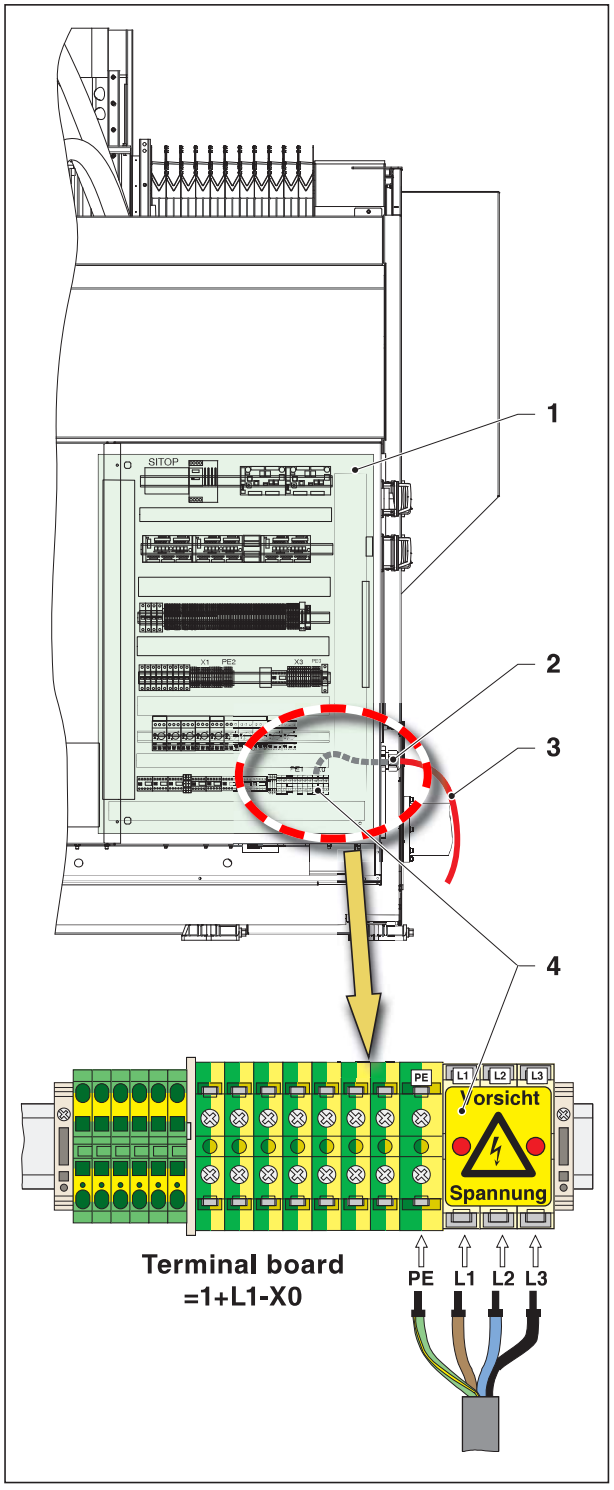
  Doubling such distance, according to the same effective sound sources, causes an increase by 3 db(A) in sound level.

- Heat sources whose temperature is not constant and that are located next to the machine, as well as draughts, impact not only the quality of the working conditions, but also the precision of the machine's operation. If necessary, adopt the relevant measures to create a protective screen.



	L1	L2	L3	PE
L1	——			
L2	400 V	——		
L3	400 V	400 V	——	
PE	230 V	230 V	230 V	——

Grid voltage control



Electrical box and connection terminals

Power connection

Warning

The machine and the relevant accessories can be connected to the mains only by a skilled electrician.
When making the connection, the power supply wires must not be live.

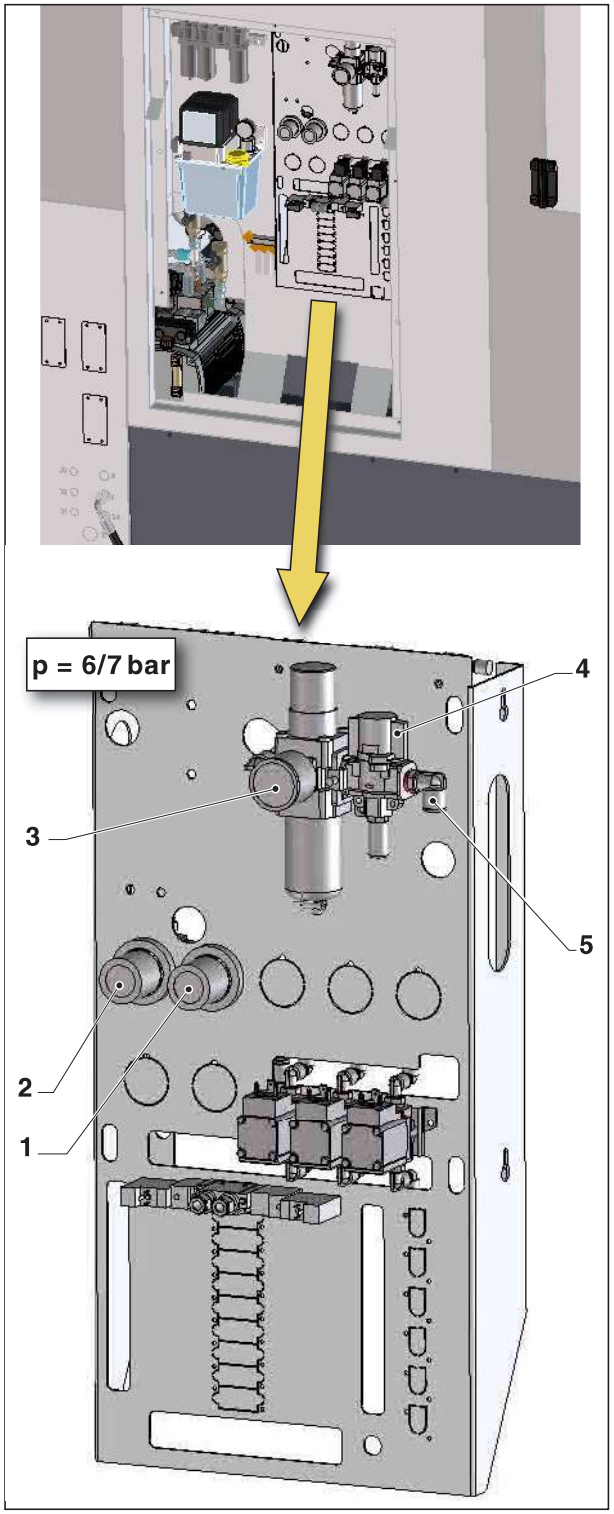
- Place the power cable (3) in the cable gland PG (2) on the side of the electric cabinet (1).
- Connect the three phases, L1, L2 and L3 to the terminal strip=1+L1-X0 (4) (terminals L1, L2 and L3).
- Connect the grounding wire (yellow/green wire) to the PE terminal of the terminal strip.
- Tighten the cable gland PG (2).

Check of correct connections

- Before connecting the machine, always check the grid's voltage:
  Between phases ..... 400 V (+10/–10%)
  Between phase and PE..... 230 V
- In order for the machine to work properly, it must be connected to a clockwise (right-handed) rotating field.
  Check the connection before starting the connection terminal board.

Caution:
It is possible to connect the machine to a grid equipped with an automatic residual current device only if the latter is of the universal sensitivity type.

Reason:
Actuations used in this machine can generate continuous fault currents that compromise the protective function of an automatic residual current device.



Air connection

Network connection data

Caution:
The presence of a fuse in the machine is strictly mandatory!
Strictly observe the value below.

Voltage ..... 3/PE ~ 400 V
Frequency ..... 50/60 Hz
Max. voltage variations .....+10/-10%
Absorbed power .....20 kVA
Fuse .....50 A/gG, gl.
Short circuit power .....10 kA_{err}
Supply section .....min. 4×10 mm^2

Note:
More detailed information on power connections can be found in the documentation of your machine's power system. For further information, please refer to the contents of the documentation of the power system.

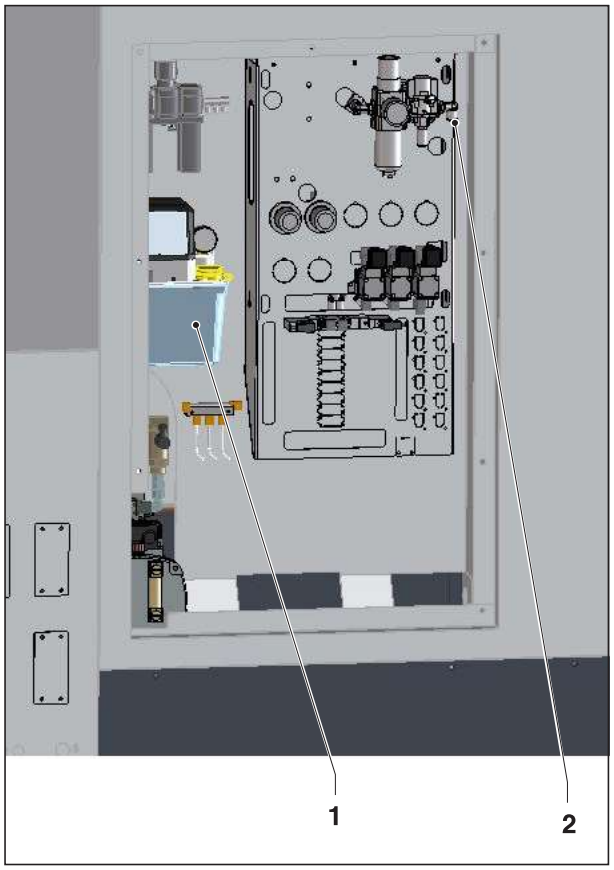
Pneumatic connection

Feeding pressure ..... 6/7 bar
Feeding quality .....min. 200 l/min

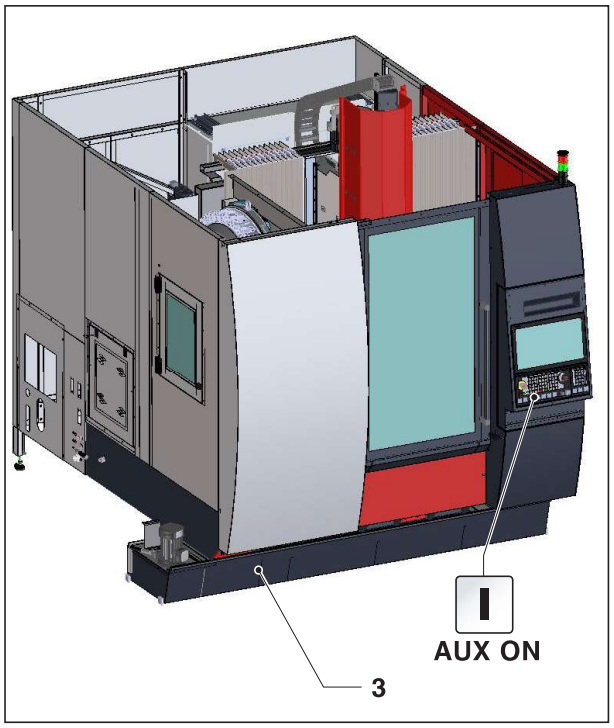
- Connects the air vent to the fitting (5) of the pneumatic unit (compressed air pipe ø 12 mm).
- The rotation of the manual valve (4) opens/closes the supply of compressed air to the pneumatic system.
- The set pressure can be viewed on the pressure gauge (3).
- Pressure gauge 1 shows the spindle pressurization.
- Pressure gauge 2 shows the table pressurization.

The compressed air to be used by the machine should be compliant with standard ISO 8573-1; the quality of the air must be compliant with CLASS 2.2.2, more specifically:

Particle impurities (µm)	1
Maximum concentration of impurities (mg/m^3)	1
H_2O dew point (°C)	-40
Maximum oil concentration (mg/m^3	0,1



Machine left side



Machine front side

Commissioning

- All uncovered parts must be drenched with an oil-soluble additive and must not be treated before commissioning.
- Check the grease level in the central lubrication system tank (1), on the left side of the machine. If necessary top up the grease.
- Connect the compressed air supply (2)
- Pour the cooler in the tank (3).

  Filling quantity ..... ca. 250 l
  Addit. paper filter (optional) ..... ca. 160 l
- Check that the line pressure falls between 6 and 7 bar.
- Check that the pressurising pressure value of the table remains between 0.4 and 0.8 bar.
- For other uses of the machine, please refer to the "Specific usage and programming instructions for the EMCO FAMUP machine" chapter.

Note:
In the "Maintenance" chapter there are instructions on the quantities that are necessary to fill up to capacity, the quality of the lubricant and cooler required and some suggestions.