

CUTTING MACHINE

OXYTOME PLASMATOME HPI

SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE



EDITION : EN
REVISION : G
DATE : 02-2024

Instructions for use

REF: **8695 4185**

Original instructions

LINCOLN[®]
ELECTRIC

Thank for the trust you have expressed by purchasing this equipment, which will give you full satisfaction if you follow its instructions for use and maintenance.

Its design, component specifications and workmanship comply with applicable European directives.

Please refer to the enclosed CE declaration to identify the directives applicable to it.

The manufacturer will not be held responsible where items not recommended by themselves are associated with this product.

For your safety,there follows a non-restrictive list of recommendations or requirements, many of which appear in the employment code.

Finally we would ask you kindly to inform your supplier of any error which you may find in this instruction manual.

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INFORMATIONS

DISPLAYS AND PRESSURE GAUGES

The measuring devices or displays for voltage, current, speed, pressure, etc., whether analog or digital, should be considered as indicators

For operating instructions, adjustments, troubleshooting and spare parts see safety instructions for use and maintenance

REVISIONS

REVISION B 05/15

| DESIGNATION | PAGE |
|--------------------|------|
| Created in English | |

REVISION C 10/15

| DESIGNATION | PAGE |
|-------------|------|
| Update | F-57 |

REVISION D 03/16

| DESIGNATION | PAGE |
|-------------|------|
| Update | F-57 |

REVISION E 10/17

| DESCRIPTION | PAGE |
|----------------|-------------|
| Laser deletion | F-62 ; F-63 |

REVISION F 01/24

| DESCRIPTION | PAGE |
|-----------------|------|
| To change logos | |

REVISION G 02/24

| DESCRIPTION | PAGE |
|---------------------------|------|
| Disconnecting valve added | |

| N° | MACHINE |
|-------------|----------------|
| 07051415 NG | 15 HPi |
| 07051420 NG | 20 HPi |
| 07051421 NG | 20 SYM HPi |
| 07051425 NG | 25 HPi |
| 07051426 NG | 25 SYM HPi |
| 07051430 NG | 30 HPi |
| 07051431 NG | 30 SYM HPi |
| 07051432 NG | 30 RS HPi |
| 07051433 NG | 30 RS SYM HPi |
| 07051435 NG | 35 HPi |
| 07051436 NG | 35 SYM HPi |
| 07051437 NG | 35 RS HPi |
| 07051438 NG | 35 RS SYM HPi |
| 07051440 NG | 40 HPi |
| 07051441 NG | 40 SYM HPi |
| 07051442 NG | 40 RS HPi |
| 07051443 NG | 40 RS SYM HPi |
| 07051445 NG | 45 RS HPi |
| 07051446 NG | 45 RS SYM HPi |
| 07051450 NG | 50 RS HPi |
| 07051451 NG | 50 RS SYM HPi |
| 07051455 NG | 55 RS HPi |
| 07051456 NG | 55 RS SYM HPi |
| 07051460 NG | 60 RS HPi |
| 07051461 NG | 60 RS SYM HPi |
| 07051465 NG | 65 RS HPi |
| 07051466 NG | 65 RS SYM HPi |

A - IDENTIFICATION

Quote this information in all correspondence.



LINCOLN ELECTRIC **CE**
rue LAVOISIER - BP099
79201 PARTHENAY CEDEX - FRANCE

Année de fabrication :
Type : N°Serie :
Designation :
+ +

Tension : Fréquence :
Intensité maximale :
Pouvoir de coupe en court circuit :
Puissance électrique consommée :
Masse :

B - SAFETY INSTRUCTIONS

For general safety instructions, please refer to the specific manual supplied with the equipment.



1 - AIRBORNE NOISE

Please refer to the specific manual supplied with the equipment.

2 - PARTICULAR SAFETY INSTRUCTIONS



HANDLING

- For installation or maintenance operations, the operator must use the lifting eyes provided for that purpose and shown on the drawing.



CONDITIONS OF USE

- No object is to be placed on the rolling tracks.
- Do not climb on the cable drag chain.
- Before handling sheets, make sure that the safety of persons and property is protected.
- Before using the machine, make sure that all the guards are in place.
All guard covers must be screwed in.
Only authorised personnel may access electrical cabinets, which must have locking systems.
- No maintenance may be carried out on the machine when it is supplied with power.
- For any extended absence, the operator must shut off the supply of utilities (electricity and fluids).
- Before anyone starts working between the rolling tracks, make sure that the power supply to the machine has been switched off (locking an emergency stop button is sufficient).



STABILITY


- The machine must be anchored to the floor through the holes provided on the base or feet.



"No climbing on the structure of the machine other than on platforms or gangways designed for that purpose. To access equipment at heights, the user must use accessing means in accordance with the regulations, such as a safe mobile gangway, lift basket etc."




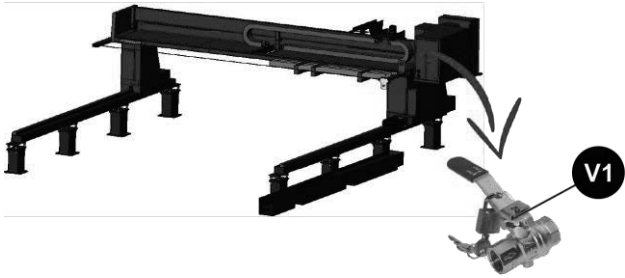
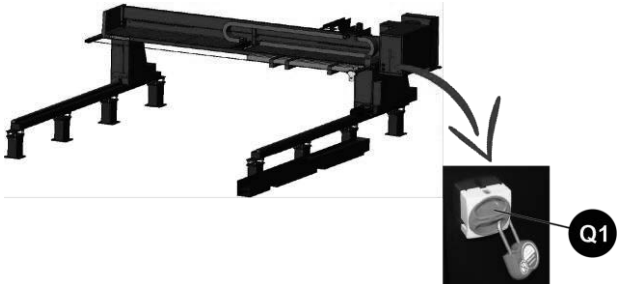
Clean the working area from time to time.


 This machine may only be moved by its designer, namely **LINCOLN ELECTRIC**.

 **Never modify the machine.**
The machine is **not** designed for anchoring lifting equipment.

 The use of Personal Protective Equipment (PPE) is **mandatory**.

 Machine **maintenance** must be carried out **with all the energy supplies switched off**.
The disconnection and padlocking of all energy sources is **mandatory**.

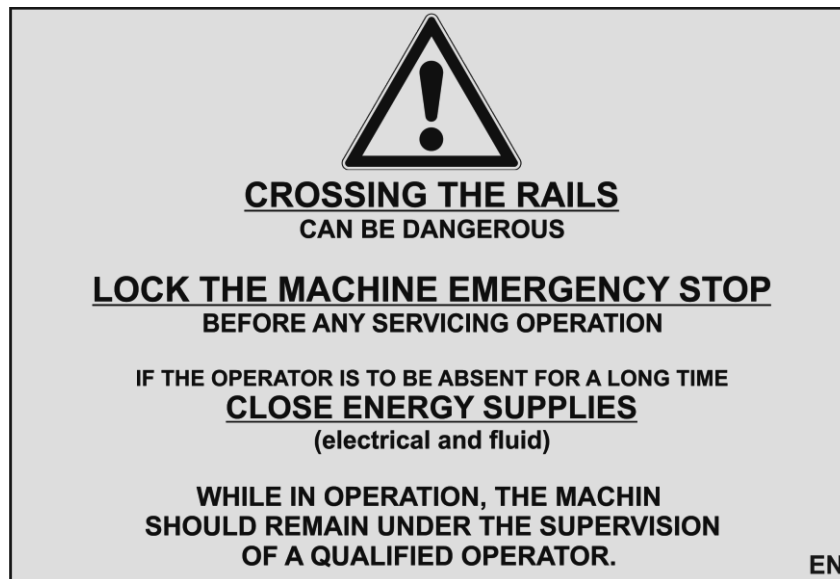
| Pneumatic locking out: | Electrical locking out: |
|--|---|
| <p>Pneumatic locking out is achieved by means of the disconnecting valve « V1 ».</p>  | <p>Electrical locking out is achieved by means of the disconnecter « Q1 ».</p>  |

 The emergency stop and safety lines must be interlocked and tested in accordance with the electricity diagram of the machine.

HANDLING OF PARTS

- The equipment for handling workpieces that have been or need to be cut is not part of the supply and is to be provided by the customer. The customer must therefore take protective measures appropriate for the equipment for handling the workpieces.
- **IMPORTANT:** While handling sheets to cut, take the necessary precautions to avoid impacts on the machine and the rolling tracks.
- Impacts on any of the elements can lead to squareness faults or the malfunctioning of the electrical shaft and therefore incorrect cutting of the workpieces.
- For safety reasons, the operator may not climb on the cutting tables to handle the workpieces.
- An accidental manoeuvre could restart the movement unintentionally.
- An operator entering in the area between the rolling tracks could be caught between the pieces and the machines.
- The machine must remain under the supervision of a trained operator when it is operating.

For safety reasons, please apply the label supplied in this folder near the machine control console.



3 - LAYOUT



The operator station is located before the control console.

The machine you have purchased can be hazardous if you do not take certain precautions for use.

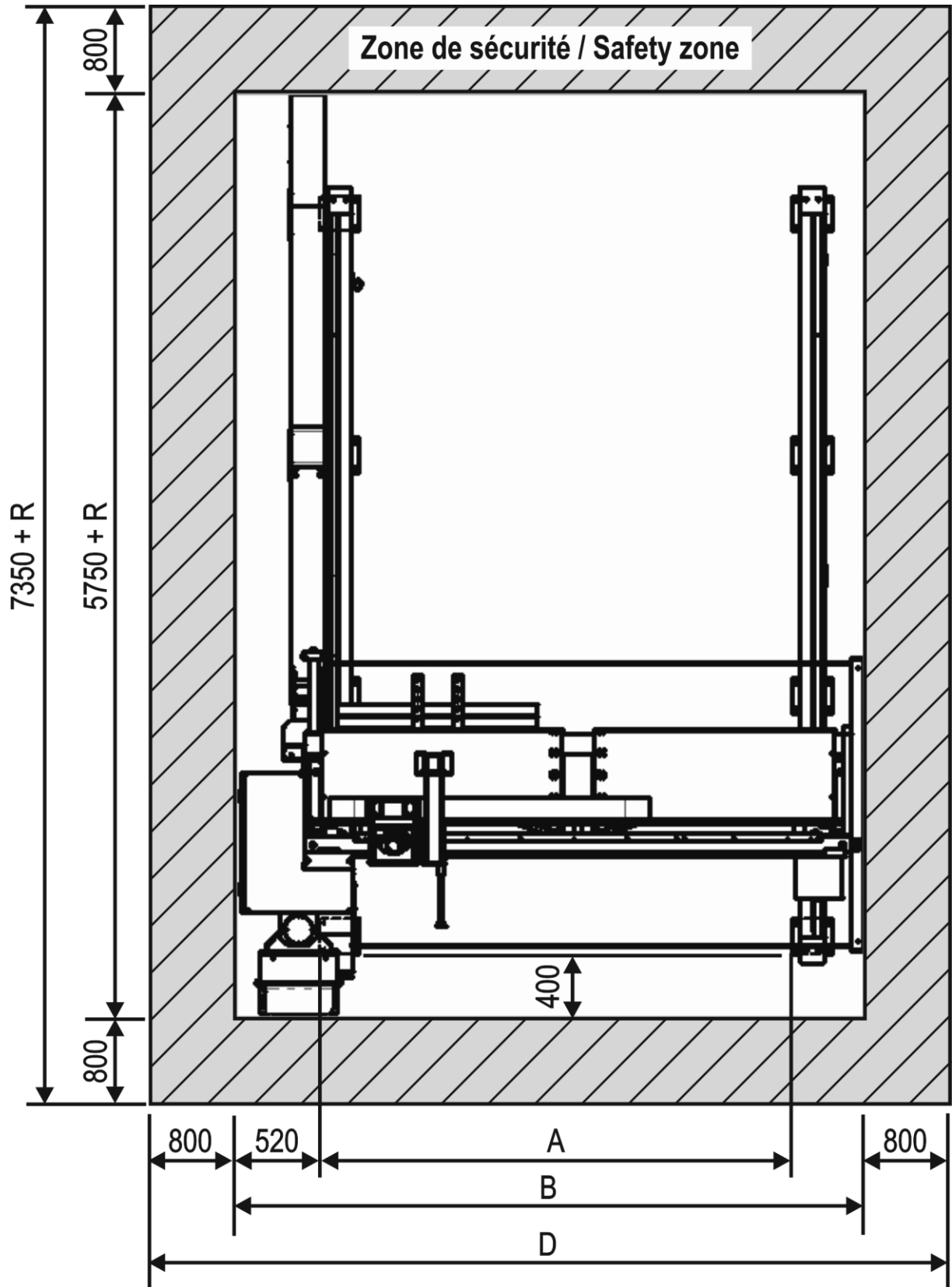
Make sure that no part of the machine can come within less than 500 mm of an obstacle according to the safety standards NF EN 349.


IMPERATIVE: the operator passage way must be clear over a width of at least 800 mm according to the safety standards NF EN 547-1-3(see Layout section).

The floor should be marked out as shown in the enclosed drawing.

While accessing the marked area, any person could be hit by the machine or the cable drag chain.

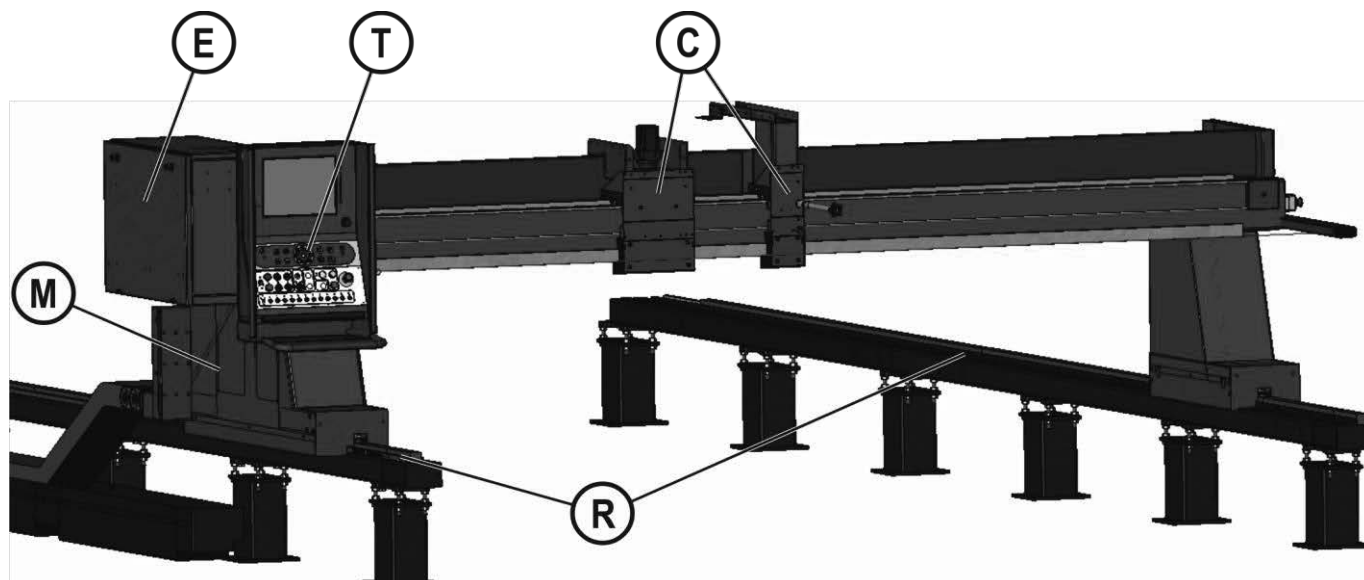
| Size | A (mm) | B (mm) | D (mm) | R (optional) | |
|------|-----------|-----------|-----------|----------------|------------|
| | | | | n x W000276325 | W000276326 |
| 15 | 2450 | 3420 | 5020 | ↓ | ↓ |
| 20 | 2950 | 3920 | 5520 | (2997 x n) | + 1498,5 |
| 25 | 3450 | 4420 | 6020 | | |
| 30 | 3950 | 4920 | 6520 | | |
| 35 | 4450 | 5420 | 7020 | | |
| 40 | 4950 | 5920 | 7520 | | |
| 45 | 5475 | 6420 | 8020 | | |
| 50 | 5975 | 6920 | 8520 | | |
| 55 | 6475 | 7420 | 9020 | | |
| 60 | 6975 | 7620 | 9520 | | |
| 65 | 7475 | 8420 | 10020 | | |



 Location given for an unequipped machine; for equipped machines, see the specific drawing supplied.

C - DESCRIPTION

1 - DESCRIPTION



| | |
|----------|-------------------------|
| M | Mechanical assembly |
| R | Rolling track |
| C | Tool carriage |
| T | Control panel |
| E | Electrical power system |
| A | Accessories |

2 - GENERAL

These cutting machine ranges allow cutting :

- 5mm to 300mm thick plates using **OXYCUTTING (OXYTOME HPi)**,
- 0.5mm to 150mm thick plates using **PLASMA CUTTING** (depending on equipment) (**PLASMATOME HPi**)

and 1500mm to 6500mm wide depending on the model.

The possible cutting length is 3050 mm on the basic machine plus 2997 mm per additional rolling track length.

These machines use **OXYCUTTING, PLASMA CUTTING, MARKING** with one or more heads depending on the versions.

These pieces of equipment are intended for all industries that cut ferrous or non-ferrous electricity conducting materials.

The diversity of solutions proposed makes it possible to address the most varied applications:

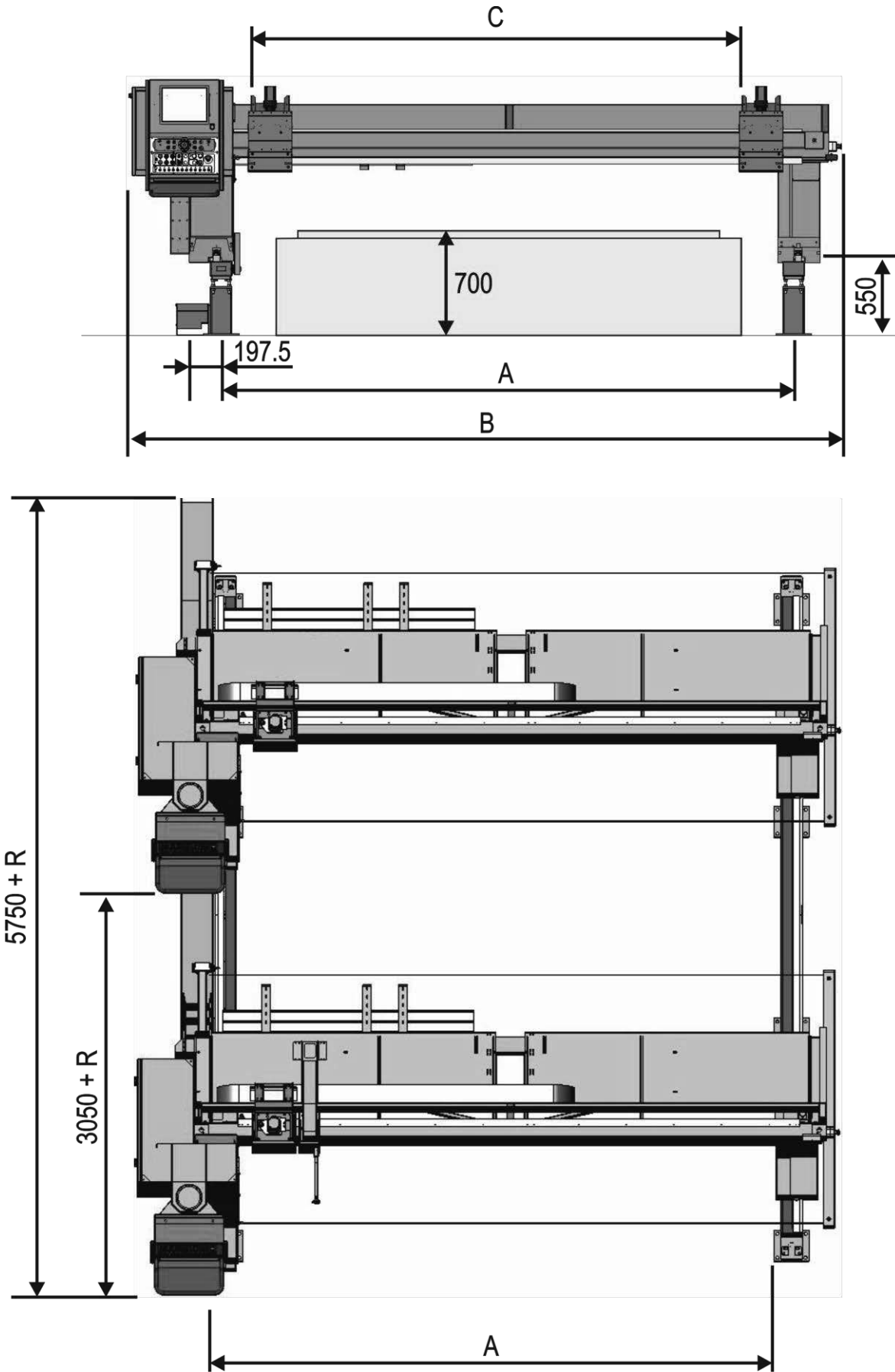
- ⇒ Boiler making
- ⇒ Ship building
- ⇒ Fine metal work
- ⇒ Training centres
- ⇒ Farm and railway equipment
- ⇒ Ventilation and refractory industries
- ⇒ Public works equipment
- Etc. ...

The equipment is controlled by an **HPC DIGITAL PROCESS HPi**. The assembly that is thus made up allows the rational use of the machines and optimised management of the products to cut.

These machines are designed to combine ruggedness and high performance:

- ⇒ High-inertia rolling track
- ⇒ Driven by rack on the two axes
- ⇒ Single or double power system depending on the application
- ⇒ Centralised controls
- ⇒ Large number of options

3 - MECHANICAL ASSEMBLY (Ref. M)



| Size | A (mm) | B (mm) | C (mm) | R (optional) | |
|------|-----------|-----------|-----------|----------------|------------|
| | | | | n x W000276325 | W000276326 |
| 15 | 2450 | 3420 | 1925 | ↓ | ↓ |
| 20 | 2950 | 3920 | 2425 | (2997 x n) | + 1498,5 |
| 25 | 3450 | 4420 | 2925 | | |
| 30 | 3950 | 4920 | 3425 | | |
| 35 | 4450 | 5420 | 3925 | | |
| 40 | 4950 | 5920 | 4425 | | |
| 45 | 5475 | 6420 | 4830 | | |
| 50 | 5975 | 6920 | 5330 | | |
| 55 | 6475 | 7420 | 5830 | | |
| 60 | 6975 | 7620 | 6330 | | |
| 65 | 7475 | 8420 | 6830 | | |

The main end carriage makes the machine roll on the rolling track and guides it. The beam is fixed on the end carriage so that the axis of the tools is placed as close as possible to the centre line of the guide rollers. The longitudinal drive motor is placed inside the end carriage for improved protection.

The secondary end carriage may be fitted with a support that is designed especially for a second motor of the optional double power system.

For the RS version, the secondary end carriage is symmetrical with the main end carriage. It is imperatively equipped with a double power system.

The beam is made up of a high-inertia tube on which two guide rails are fixed. These rails support the tool carriages. The position of these rails is designed for improved carriage movement, while allowing guidance as close to the tool as possible.

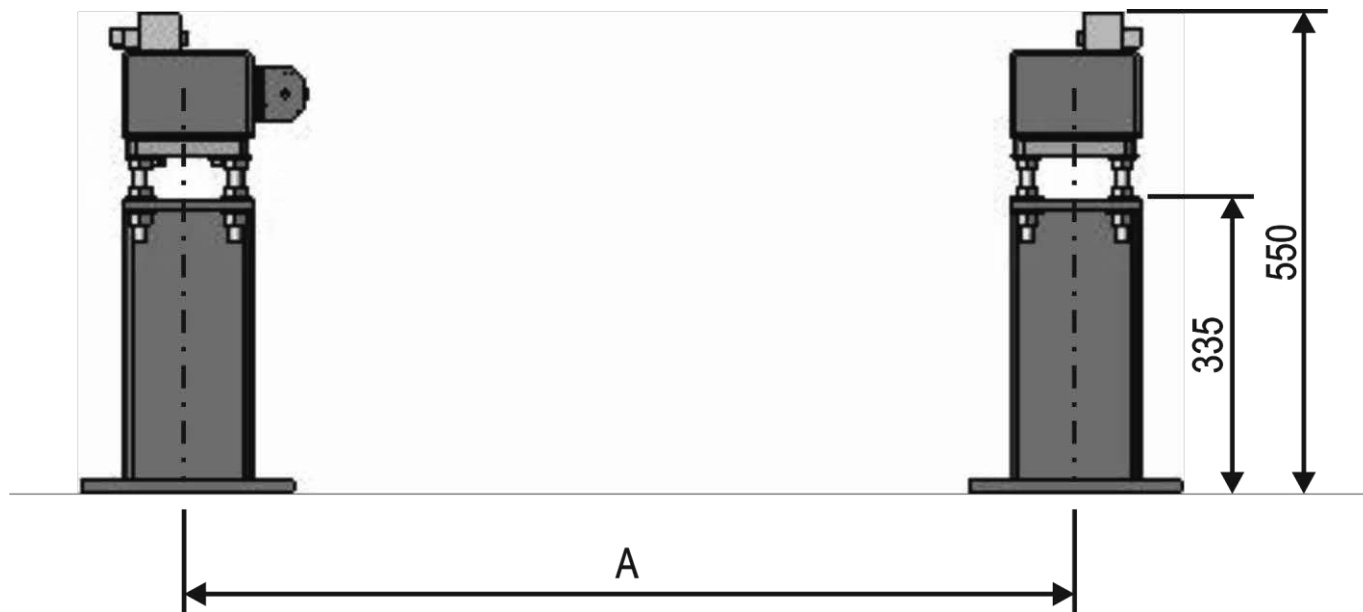
In the RS version, the beam is reinforced.

The transverse movement is provided by a powered carriage. It also drives the auxiliary carriages by means of a metal cable.

The high feed speed is 15 m/min

The contouring and working speed is adjustable from 0.05 to 4 m/min with a single power system and 0.05 to 10 m/min with a double power system.

4 - ROLLING TRACK (ref. R)



This assembly is always made up of:

- 2 equipped rails
- Adjusting plates
- Supply chain support
- Unequipped supply chain

This rolling track has high inertia, making it highly stable. Each element (one on each side) is made up of a machined tube, on which a drawn part is fixed to guide the machine and support the drive rack or racks.

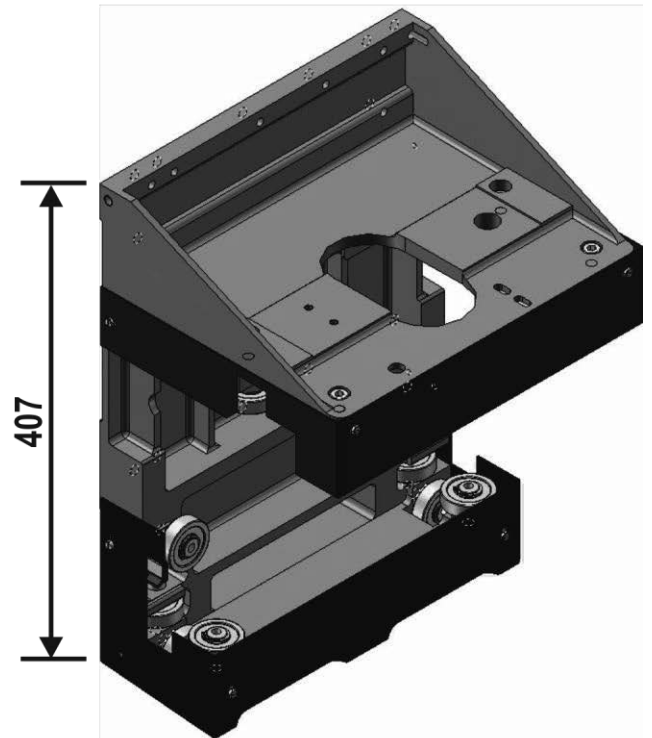
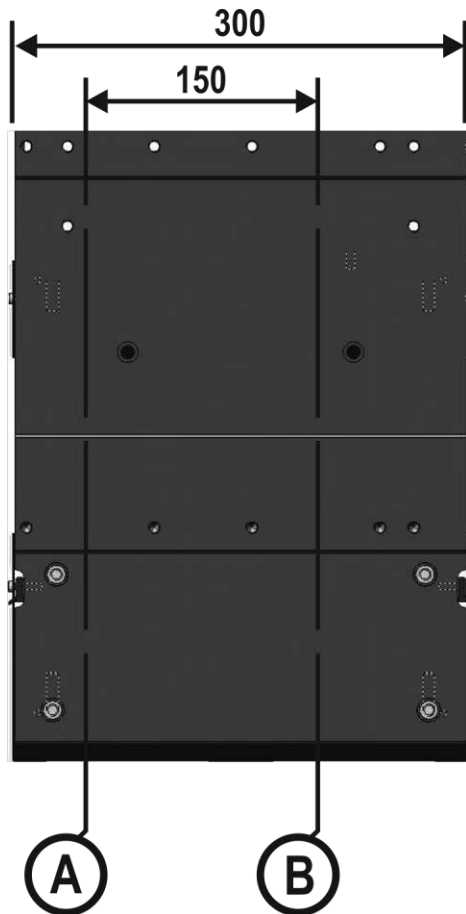
The rail assembly (4.5m long for the basic length) rests on adjustment plates, which are themselves placed on metal feet. The height of a rail mounted on its feet is 550 mm.

The assembly made up in this way is fixed to the floor, and alignment is made easier by the presence of adjusting plates. Safe movement is guaranteed by the presence of electrical and mechanical stops.

The rolling track also includes the chain support and supply chain assemblies. The chain is fixed at the bottom on the outside of the left-hand rail. These systems make it possible to supply the machine in optimum conditions by minimising the driving efforts, limiting wear and tear of the cables and pipes and guaranteeing the safety of operators.

The installation of racks on the secondary rail makes it possible to work with two power systems.

5 - MASTER CARRIAGE (Ref. C)



These carriages are made of light alloy and are equipped with adjustable guide rollers. The position of these rollers has been designed for optimum guiding.

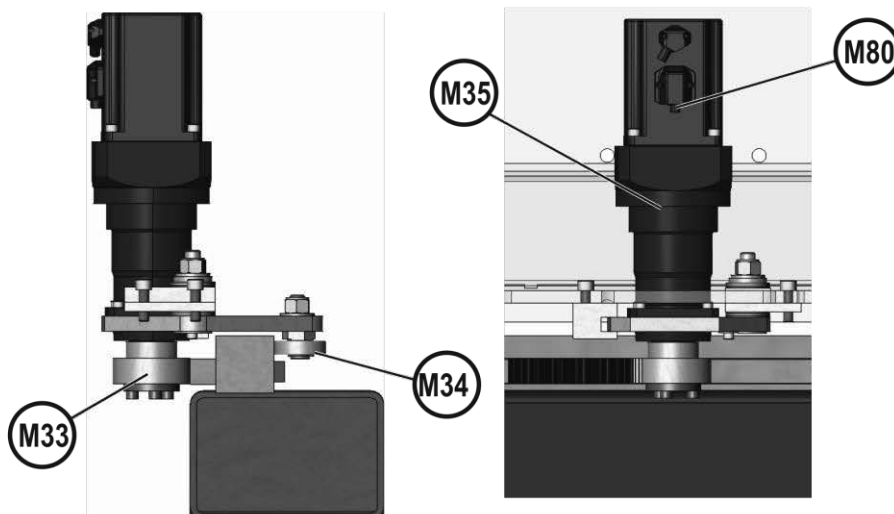
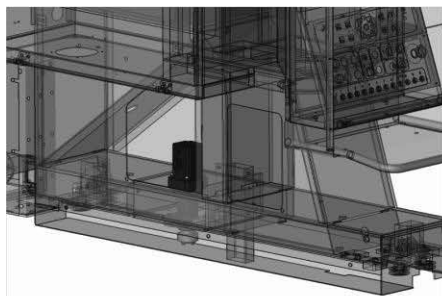
The powered carriage has the following functions:

- Supporting the transverse power system
- Driving the auxiliary carriage.
- Supporting one or more tools.
(Depending on the version)

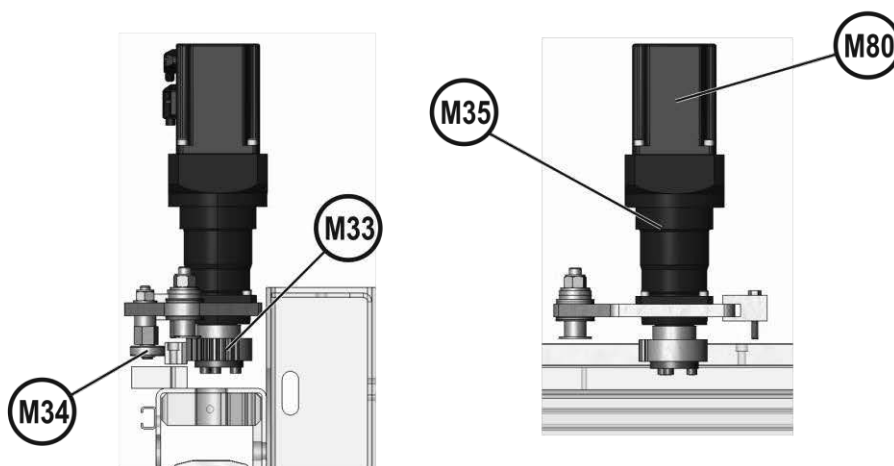
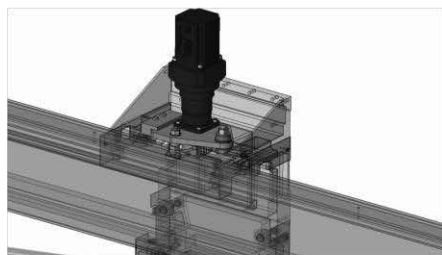
Standard tools can be fixed in two positions, A or B, depending on the customer's needs.

6 - POWER SYSTEM

LONGITUDINAL POWER SYSTEM



TRANSVERSE POWER SYSTEM



Each assembly mainly includes:

- M80** - Brushless power motor
750W 3000Rpm
- M35** - reduction gear, reduction 1/ 25
- M33** - mod 2 drive pinion with 30 teeth
- M34** - companion roller that limits the play between pinion and rack

7 - CONTROL CONSOLE

The control console of this range includes the **HPC DIGITAL PROCESS HPI**, with all the controls required for starting up the machine and operating the cutting cycle.



8 - LIMIT OF SUPPLY



Not part of the machine (to be ordered separately):

- Machine power supply cable 3 x 2.5 mm²H07 (W000010099),
- Network cable (with network option),
- Extraction control cable,
- Cable for outside information,
- Disconnecting devices on the floor
- Mechanical, chemical and thermal protection for bundles:
 - from the chain support duct outlet up to the energy source
 - from the chain outlet up to the cutting power source (if plasma option).

For cables and pipes that are not part of the machine supply, determine their length as indicated below.

Distance between the chain outlet on the floor and the power source

+ ½ length of the rolling track

+ ½ beam length

+ 3 m

9 - OPTIONS

ROLLING TRACK EXTENSION

NO. W000276325 3m long

NO. W000276326 1.5m long

This option makes it possible to extend the basic rolling track with elements that are 3 m or 1.5 m long. The machine travel range increases by:

- 2997mm with the 3 m option,
- 1498mm with the 1.5m option.

The option includes: rails, feet, ducts and cable drag chain

ASSEMBLY KIT FOR BASIC OR EXTENSION ROLLING TRACKS

NO. W000325398 4.5 m long

NO. W000325399 3 m long

NO. W000325400 1.5m long

This rolling track assembly kit contains:

- a concrete drill bit and,
- anchors for fastening the feet and chain support ducts to the floor,
- rail alignment accessories.

LONGITUDINAL TRAVEL EXTENSION, 250MM

NO. W000276327 (quantity to order for rear assembly = 2)

This option makes it possible to extend the longitudinal travel range by 250mm (in order to make up for the difference between cutting tool/marker)

SUPPLEMENT FOR ROLLING TRACK EXTENSION WITH DOUBLE POWER SYSTEM

NO. W000325396 3 m length

NO. W000325397 1.5 m length

It supplements the optional extension in the case of a double power system

CHAIN DRIVE ARM ON SECONDARY END CARRIAGE

NO. W000325406

NO. W000118439 for symmetrical machine

This option is necessary for fixing the longitudinal chain to the secondary end carriage

OVERHEAD CHAIN KIT

NO. W000276337

This option makes it possible to place supply cable drag chains in the overhead space, thus clearing floor space.

It is installed near the main end carriage only.

A double power system is recommended with this option.



The cable duct supports are to be supplied by the customer

HEAD-TO-TAIL LONGITUDINAL BASIC CHAIN, 4.5 M LONG**ON MAIN END CARRIAGE****NO. W000276333****NO. W000276334 for symmetrical machine****ON SECONDARY END CARRIAGE****NO. W000276335****NO. W000276336 for symmetrical machine**

This option is indispensable with two-torch or high-power plasma installations. It makes it possible to add a second cable drag chain opposite the basic chain

It includes:

- chain fastening,
- 4.5 m long cable drag chain,
- chain support.

HEAD-TO-TAIL CHAIN EXTENSION**NO. W000276331 length 3M****NO. W000276332 length 1.5M**

This option makes it possible to extend a head-to-tail chain in relation to the rolling track extension. It does not include a duct.

LUMINOUS COLUMN KIT**NO. 0703 3210****LUMINOUS COLUMN + HORN KIT****NO. 0703 3215**

This option is used for starting up the rotating light and the horn (depending on the selected option) when the machine is in movement (X, Y).

SAFETY LIGHT CURTAIN

Photoelectric cell protection device of the machine safety area

NO. W000276649 protection of a side of the machine.**No. W000276642** protection of the four machine sides.**ANTI-COLLISION****no. W000325507**

This option is necessary if two machines are installed on the same rolling track.

It prevents two machines from colliding by generating an emergency stop

TWO-MACHINE LIMIT CAM**No. W000325429**

This option limits the travel of each machine for use with two machines on the same rolling track

CAM SUPPORT FOR AZURMATIC TABLE**No. 0411 0387 FOR ASSEMBLY ON CHAIN****No. 0411 0388 FOR ASSEMBLY ON BEAM**

Mechanical assembly that moves along with the machine, for controlling the opening of extraction flaps if an extracting plate table is used

BOX PASSAGE CAM KIT**No. W000263088**

This option limits the longitudinal travel depending on the cutting table sizes.

4th AXIS**No. W000262013**

This option makes it possible to power a second master carriage for the automatic indexing of two plasma torches.

The two carriages are positioned independently and two identical workpieces can be cut simultaneously.

EQUIPPED SLAVE CARRIAGE**NO. 0703 3550**

It is necessary for assembling the basic torch and its tool holder when the machine uses a plasma process and for two plasma machines

This option includes:

- slave carriage
- cable brake

This carriage is fitted on the beam. To adjust the centre-to-centre distance of the tool holder, a handle is available to tighten the drive cable (upper strand). Using this handle on the opposite strand of the cable allows symmetrical cutting.

SUPPLEMENTARY TOOL HOLDER

NO. W000260759 travel 150
NO. W000325001 type RS travel 150
NO. 0705 4215 type RS travel 250

It is necessary for fitting an additional torch

It includes the slave carriage 0703 3550

Several additional tool holders can be added (five additional holders maximum).



NB: the number of tool holders limit the transverse range of the machine

CONSOLE AIR-CONDITIONING

NO. W000261789
VORTEX : W000376714

Recommended when the machine operates in an atmosphere above 35°

CONSOLE HEATING**NO. W000265262**

Recommended when the machine operates in an atmosphere below 0°C or with large temperature amplitudes

VISIO PROCESS (2 maximum/machine)**NO. W000262016**

A camera makes it possible to see the torch position on the control screen. The controlled area has an approximate diameter of 250 mm, making it easier to position the arc before and after cutting and monitor it.

Regardless of the location of the control console, the operator can control the cutting operation and position the torch.

The camera is protected from the glare effect of the plasma arc. The operator can select to view the image in black and white or in colour.

NETWORK OPTION**NO. W000264745**

The optional network of HPC makes it possible to load parts programs on the HPC numerical control via an Ethernet connection.

MARKERS**PNEUMATIC****NO. W000325475****WEN****NO. W000325474****FELT****NO. W000325480****CPM 360-400-450****NO. W000325533****MICRO-MARKING****NO. 0705 6225**

The references of OCP/CPM plasma markers only include adaptations and not the plasma installation

PLASMA CUTTING INSTALLATIONS**WITH TORCH : CPM400**

All the installations include:

The current source

- the torch
- the different control units
- the cables and pipes internal to the machine and necessary for its working.

It is however indispensable to order the following:

- the machine connection bundle
depending on the length of the rolling track.

Refer to the plasma installation instructions for its no.

PLASMA EXTRACTION

In this option, an extraction unit is necessary but is not part of the supply

1 - PLASMA TOOL HOLDER EXTRACTION (1/torch)**NO. W000372326**

The extraction includes a hood. It is fixed to the tool holder and allows the extraction of fumes around the torch.

2 - TRANSVERSE EXTRACTION FOR :**Series 20 machine no. W000325463****Series 45 machine no. 0703 5245****Series 25 machine no. W000325464****Series 50 machine no. 0703 5250****Series 30 machine no. W000325465****Series 55 machine no. 0703 5255****Series 35 machine no. W000325468****Series 60 machine no. 0703 5260****Series 40 machine no. W000325468****Series 65 machine no. 0703 5265**

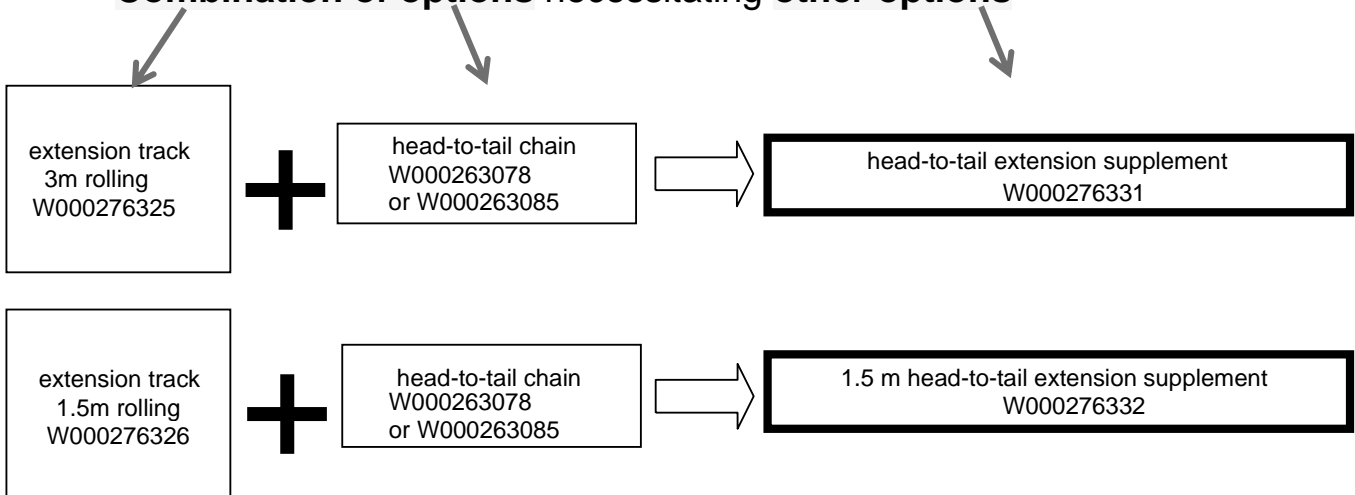
This option is an indispensable supplement for the optional tool holder extraction. It includes a duct that collects fumes from the tool holder to the main end carriage

3 - LONGITUDINAL EXTRACTION**4.5 M LENGTH, NO. W000325423****3 M LENGTH, NO. W000325424****1.5 M LENGTH, NO. W000325425**

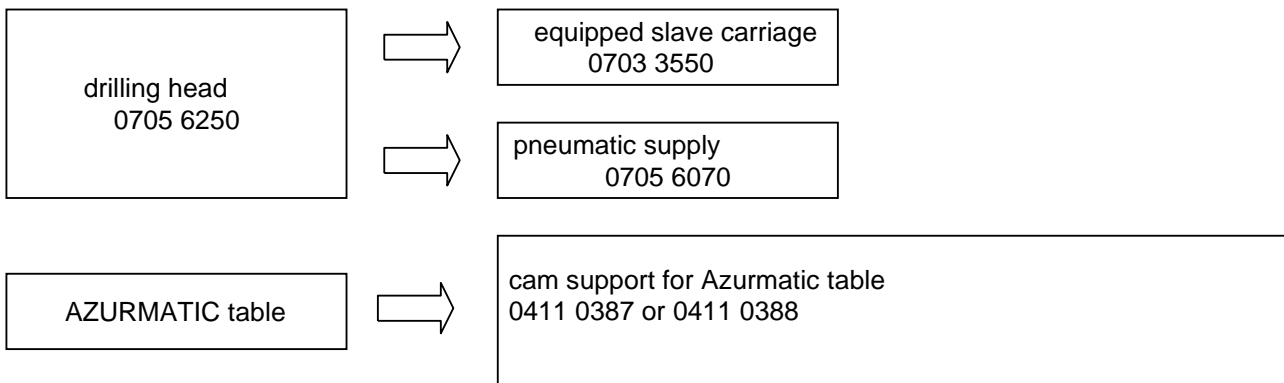
This equipment is **optional** and is used for channelling fumes from the machine to a fixed point on the floor for removal to the outside

PRECAUTIONS FOR USE OF OPTIONS on OXYTOME/PLASMATOME HPI

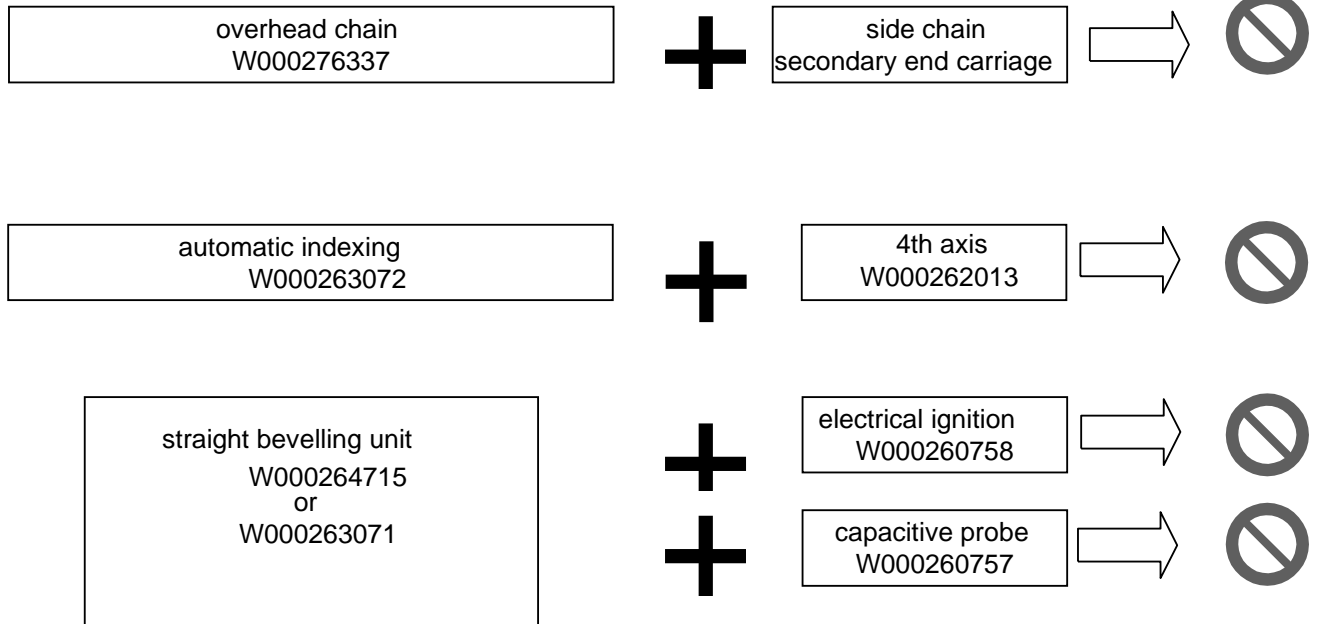
Combination of options necessitating other options



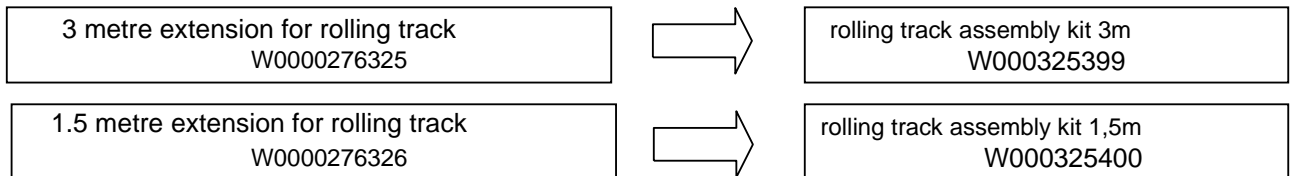
Individual option necessitating other options



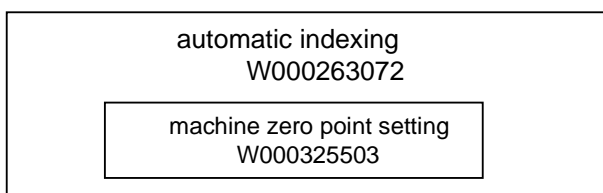
Incompatible options



Recommended options



Integrated options



D - ASSEMBLY AND INSTALLATION

1 - CONDITIONS OF INSTALLATION

THE LAYOUT OF THE INSTALLATION MUST COMPLY WITH SAFETY STANDARD NF EN 547 - 1 -3 TO ENSURE PERSONAL PROTECTION.



THE FOLLOWING CONDITIONS MUST BE COMPLIED WITH BEFORE INSTALLING THE EQUIPMENT



ELECTRICITY SUPPLY see supply drawing provided

VERY IMPORTANT

The power cable (customer supply) must have a section suitable for the power rating of the installation. The customer is responsible for protecting the power cable and the installation itself.

Such protection must be appropriate for the neutral point treatment of the electricity supply.

The information required for sizing the protection is provided on the identification plate of the installation.

SUPPLY OF GAS see supply drawing provided

PNEUMATIC SUPPLY see supply drawing provided

The user must provide a source of compressed air with a regulator that can supply the required flow and pressure. The air must be clean, de-oiled and degreased.

QUALITY CLASS: as per standard ISO 8573-1

| | | | |
|------------------------------|---------|---|---------------------------------------|
| Solid pollutant class | Class 3 | Grain size 5 μ m | Mass concentration 5mg/m ³ |
| Water class | Class 3 | Maximum dew point under pressure -20 ^o C | |
| Total oil class | Class 5 | Concentration 25 mg/m ³ | |

WATER SUPPLY (IF PLASMA AND VORTEX OPTION) see the supply drawing supplied

- Check the quality of the water supply to the vortex.
- Check the flow rate of the water vortex (water flows out of the vortex in the form of an umbrella). Pressure 4 to 6 Bar and 1 to 2 L/min flow rate depending on the application.
- The water used must be demineralised with a neutral pH (between 6.5 and 8.3), hardness below 15°F and resistivity above 100KΩ.cm.
- Depending on the characteristics of the water, use either a demineraliser, or a reverse osmosis system or any other deionising system.

ARRANGEMENT OF CABLES AND FLEXIBLE HOSES



- The customer must provide the means to support and protect cables and flexible pipes from mechanical, chemical or thermal damage from their source up to the entrance to the cable drag chain and from the machine up to the entrance to the control console

TOOLS REQUIRED FOR INSTALLING THE MACHINE ON THE SITE

- Automatic precision level (sight or laser)
- Level offering accuracy of 1/10 per metre
- Hammer drill for concrete, Ø16 drill bit
- Steel tape
- Chalk line
- Vacuum cleaner
- Belt sander or sandpaper
- Two locking pliers or two clamps
- 24-mm open-ended spanner
- 24-mm ring spanner

Equipment required for putting in place feet and duct supports :

- Assembly kit

W000325398 length 4.5 m

W000325399 length 3 m

W000325400 length 1.5 m or :

32 anchors for 4.5 m rolling track and
4 anchors for duct supports according to the reference below

Ø16 concrete bit

Ø 0.6 piano wire, length according to the rolling track

3 cylindrical pins, 6x50.

The anchors must be of the metal or chemical type, M16, minimum load 800daN

2 - PREPARING THE FLOOR

See layout drawing supplied

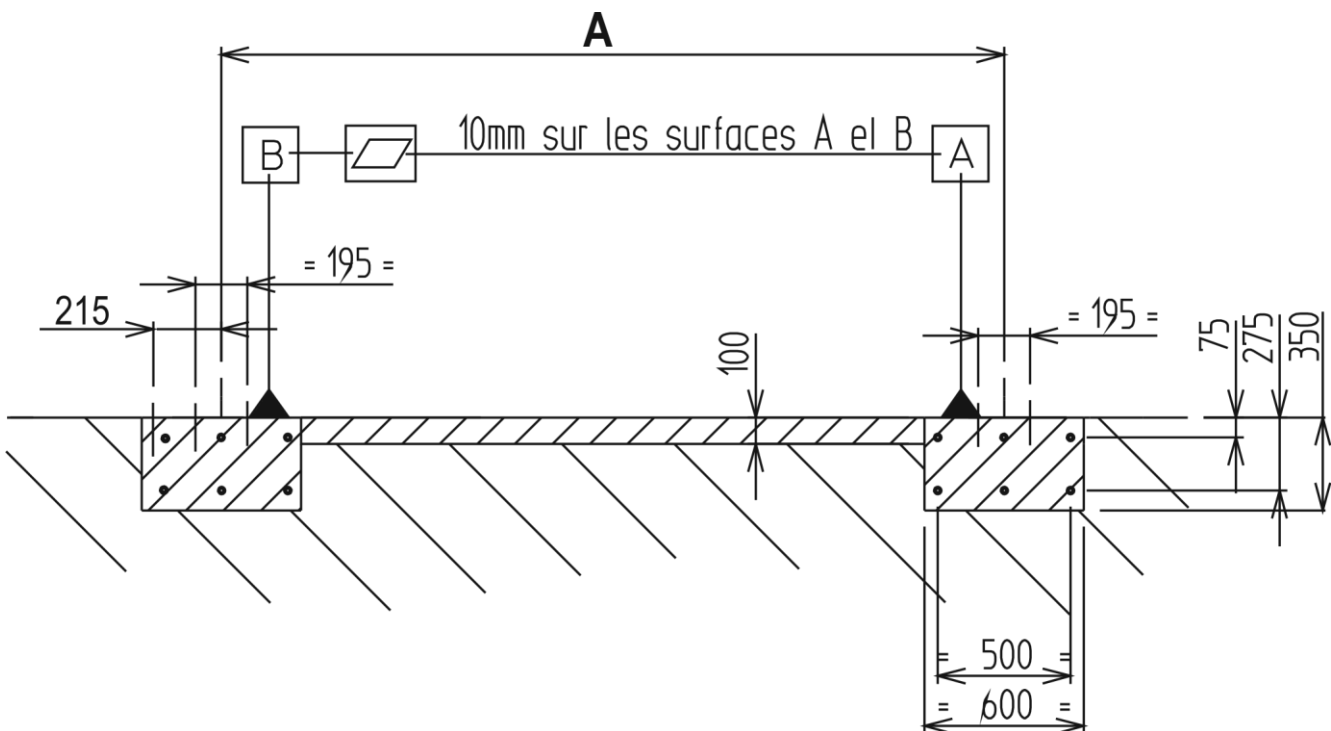
The floor does not need any particular preparation for installing the machine; however, we recommend a concrete floor for the machine to be satisfactorily stable.

Concrete screed in a single stretch made at least 21 days before (standard BAEL 93). The thickness of the screed and its reinforcement are given for guidance, and must be verified depending on the characteristics of the floor.

Single concrete longitudinal member. 20 Mpa (350 kg/m³) concrete with metal reinforcement.

Flatness over the entire site with additional travelling tracks ± 5 mm.

Mark and drill the anchor location as shown in the layout drawing.



| Size | « A » |
|------|-------|
| 15 | 2450 |
| 20 | 2950 |
| 25 | 3450 |
| 30 | 3950 |
| 35 | 4450 |
| 40 | 4950 |
| 45 | 5475 |
| 50 | 5975 |
| 55 | 6475 |
| 60 | 6975 |
| 65 | 7475 |

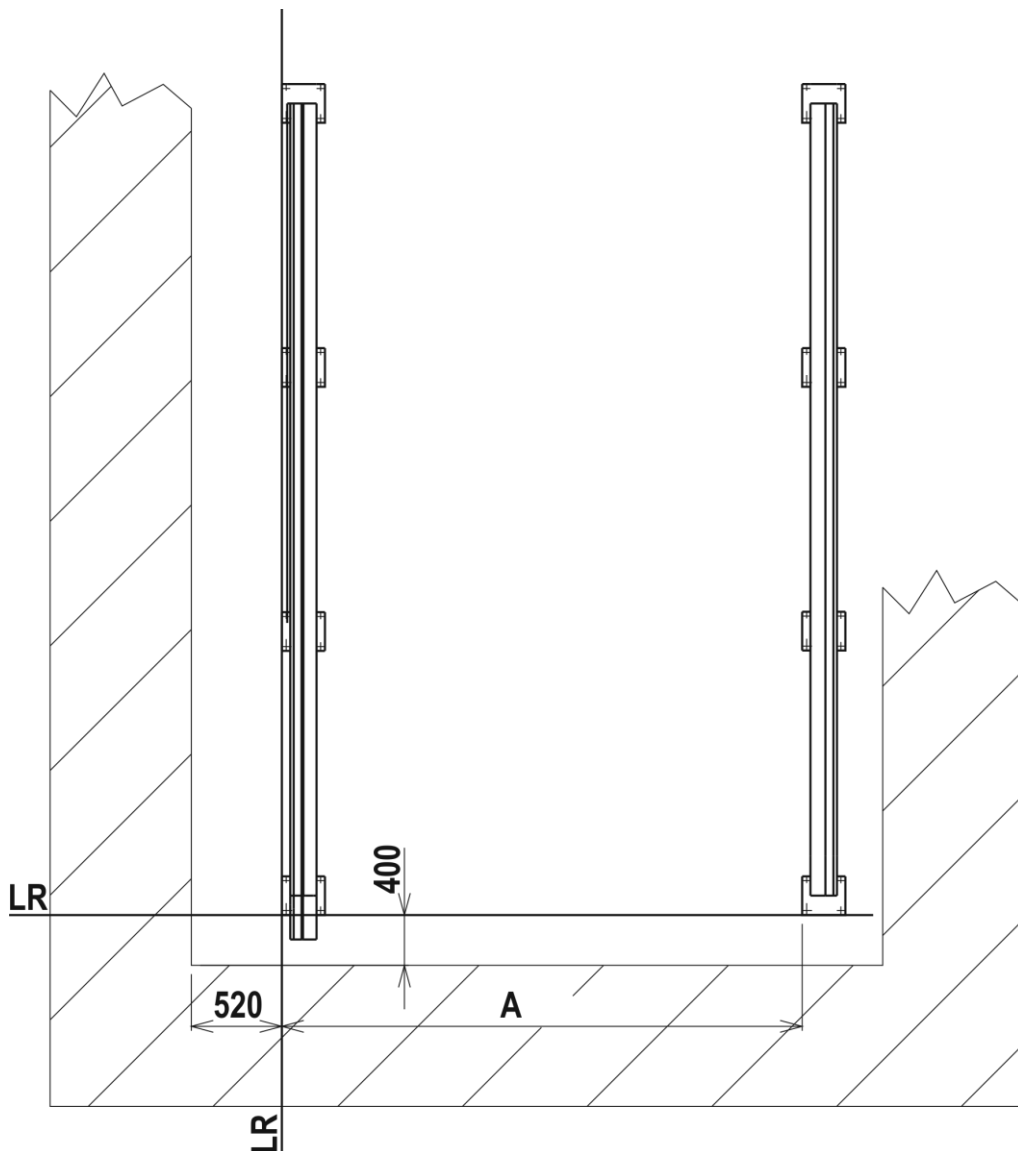
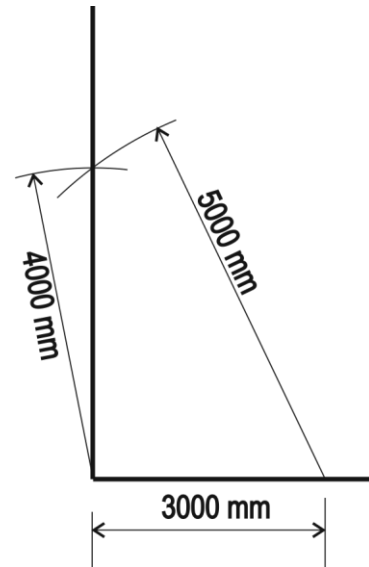
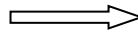
3 - INSTALLING THE ROLLING TRACK

Draw the two LR reference lines in relation to the operators' passage way

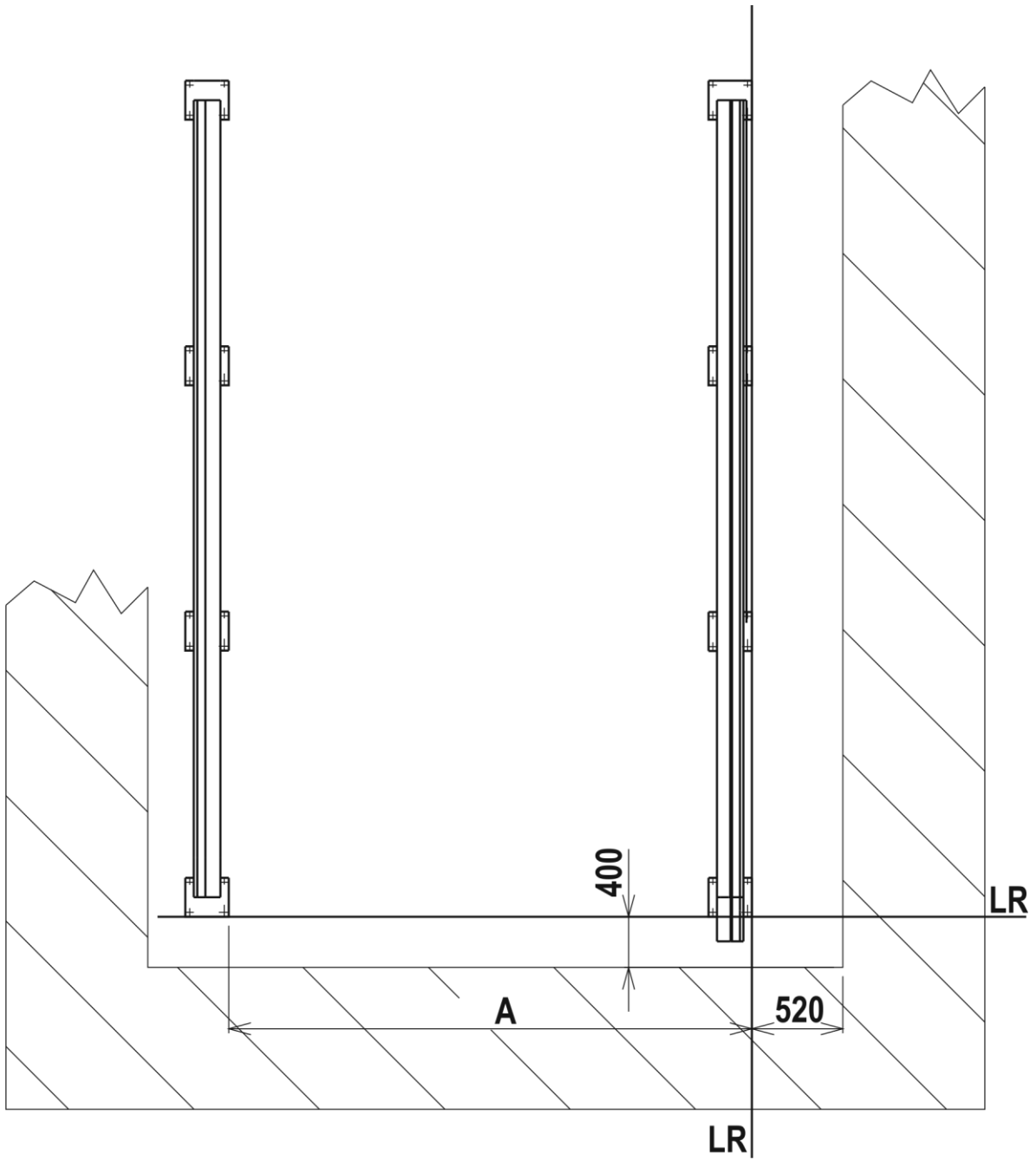
See the tracing of corridors in section B

Reminder of the drawing of two perpendicular lines using the 3-4-5 method

See dimension A on the previous page



SYMMETRIC MACHINE VERSION



I - PREPARATION OF RAIL SUPPORTS

Rail supports, ref. **R6** and **R7**, have been equipped in the factory with their intermediate plates, ref. **R2** fitted.

Screw the adjustment rods, ref. **R3**, in the plates, ref. **R2**, so as to make them flush with the upper part; lock with the screws ref. **R4**.

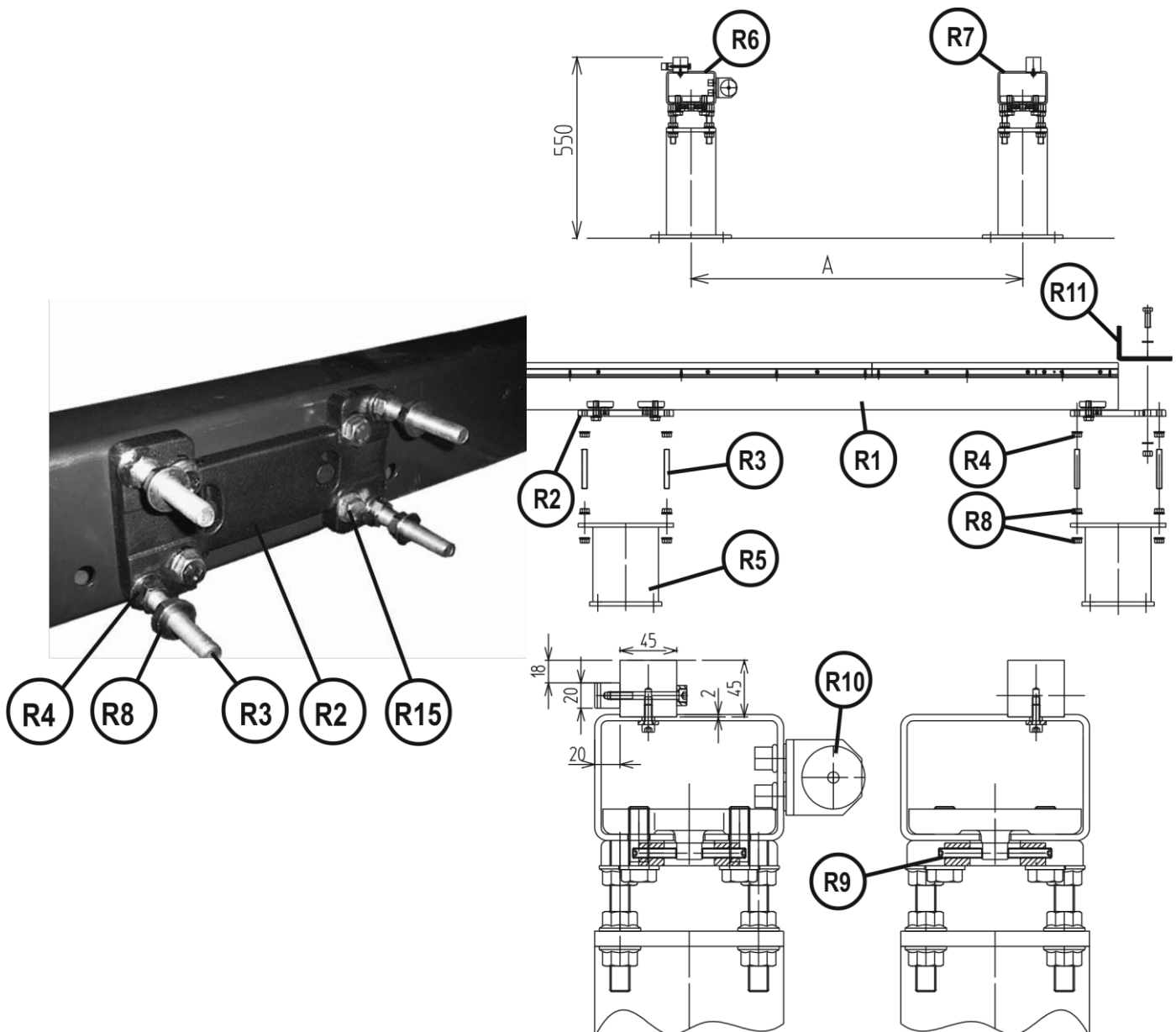
Fit a nut **R8** on each rod, at mid length.

II - PUTTING IN PLACE FEET NEAR THE MAIN RAIL

Place the feet on the floor without fixing them, following the markings on the floor.

III - PUTTING IN PLACE RAIL SUPPORTS

Place the equipped rail supports on the feet ref. **R5**, screw the second nut, ref. **R8** per rod ref. **R3** without locking them, so as to reach the 550mm height.



IV - FASTENING THE RAILS

The rails of the additional rolling tracks are to be fitted on the site.

Take off the end pieces **R37** and **R39** fastened at the end of the rack on the basic rolling track (fig. 1)

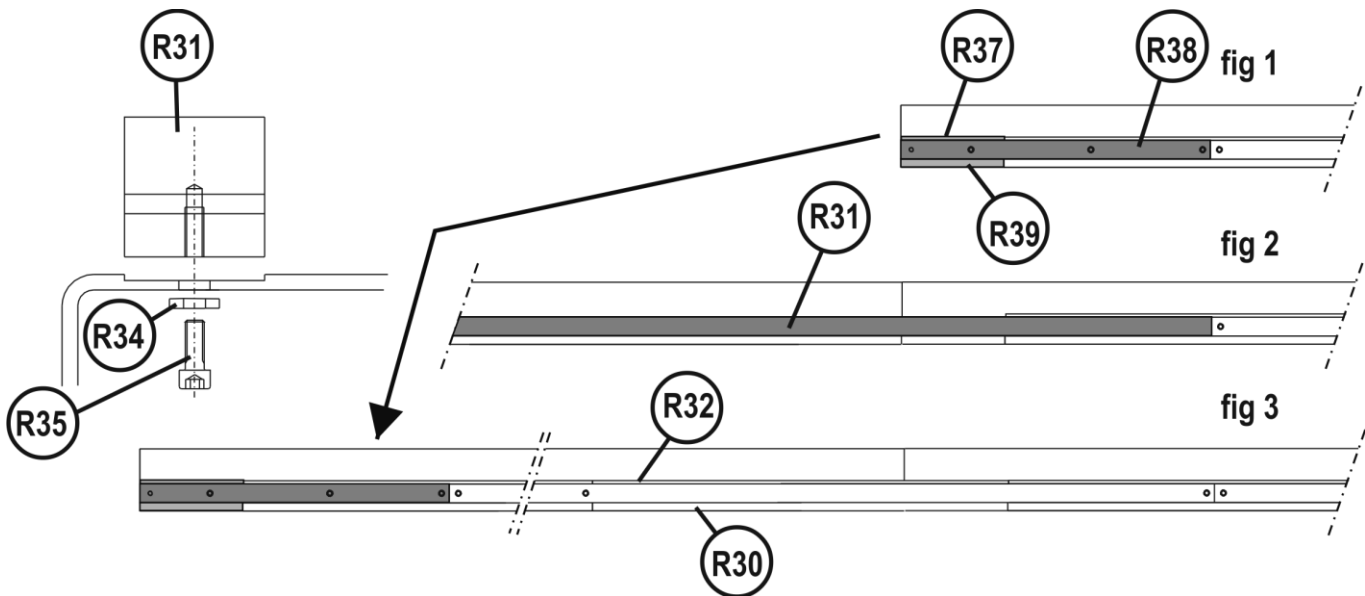
Remove the piece of rail **R38** that is 749mm long

Fix the new rail lengths **R31**, 1.5m or 3m depending on the option, with the screws **R35** and the washers **R34**.

At the end of the last extension length, put back the length **R38** (fig2)

NB: with an optional 250mm extension, the rail **R38** is replaced by that supplied with the option.

Before locking, make sure that each end of a rail abuts against the next one



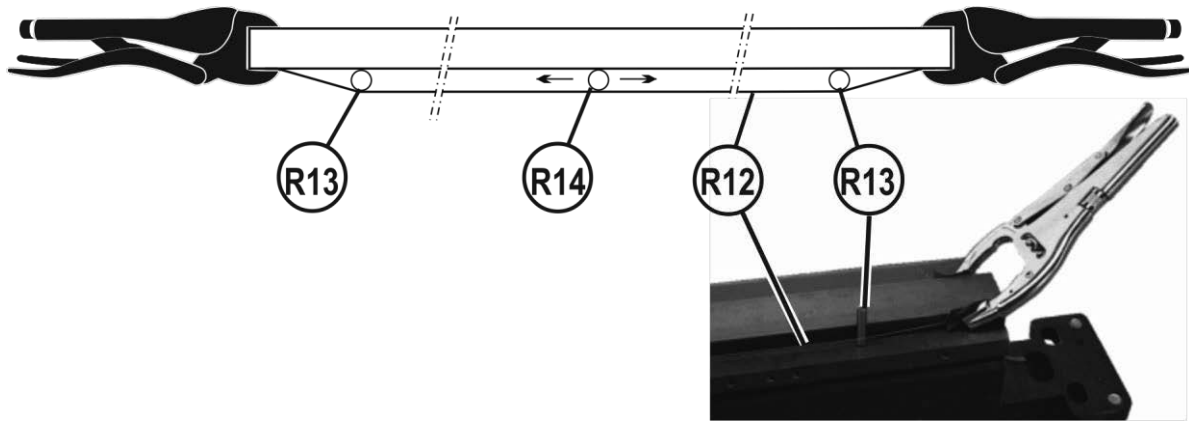
V - FASTENING THE FEET

1 - Counter drill the anchoring holes **of the first and last** foot over a depth of about 120mm (bit supplied in the assembly kit)

2 - Vacuum clean the drilling holes before putting the anchors

3 - Place the washer, start screwing the nut on the threads, then insert the anchor in the hole through the part to fix

4 - Tighten by hand as much as possible and then with the key, till it is locked with a tightening torque of 120 Nm (air impact wrench recommended)



5 - Stretch piano wire, ref. **R12** and lock it at each end with locking pliers (use a piece of sandpaper between the pliers and the wire to avoid slipping),

6 - Put a gauge, ref. **R13** , at the two ends. Move the feet and the rail so as to achieve the required straightness, by sliding the gauge **R14** between the rail and the piano wire.

7 - Counter drill the other anchoring holes and fix the other feet

VI - HORIZONTAL ADJUSTMENT

Make sure that all the screws **R15** are properly tightened

Measure the difference in level over the entire surface of the job with a sight

Start with the foot located at the intermediate point of the level difference and set the rail 550mm high using the screws, ref. **R8** .

Adjust the longitudinal horizontality of each rail with the sight and the transverse level with a 1/10 precision level on each foot, using the nuts ref. **R8** , and lock them (see fig.1,2,3)

Precision over the entire rolling plane: $\pm 0.25\text{mm}$

VII - STRAIGHTNESS

Unlock the screws **R15** .

Adjust the straightness of the main guide rail using the third gauge, ref. **R14** . Check if the gauge passes between the surface to inspect and the piano wire (correct any faults accordingly).

Tolerance $\pm 0.1\text{mm}$

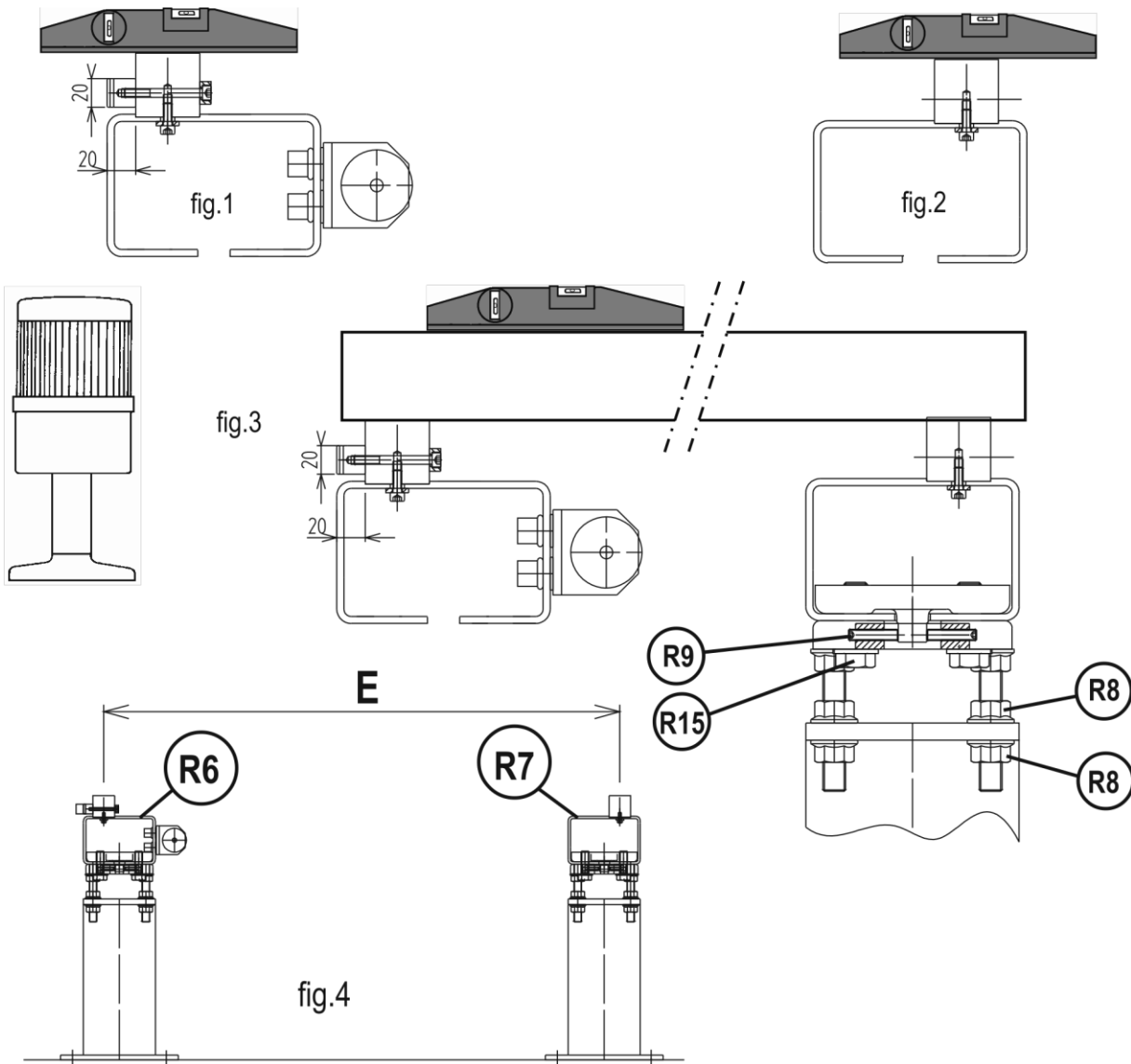
Use the screws ref. **R9** to make the adjustment.

Lock the screws, ref. **R15** .

VIII - SECONDARY RAIL

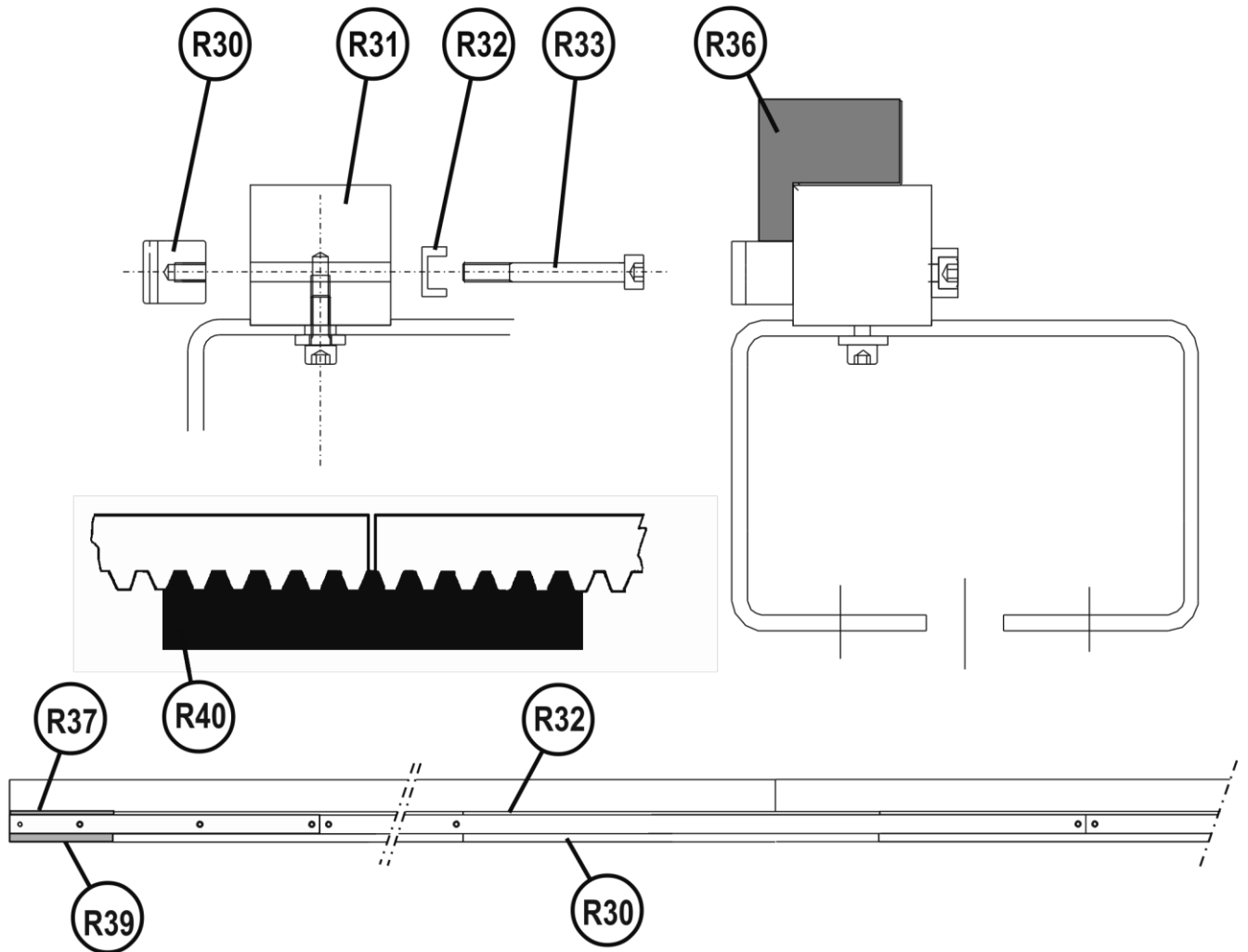
Proceed similarly as with the main rail, using the dimension **E**

Tolerance ± 1mm fig.4



Check the horizontal adjustment once again fig..1,2,3.

| Size | « E » +/- 1mm |
|------|---------------|
| 15 | 2515 |
| 20 | 3015 |
| 25 | 3515 |
| 30 | 4015 |
| 35 | 4515 |
| 40 | 5015 |
| 45 | 5540 |
| 50 | 6040 |
| 55 | 6540 |
| 60 | 7040 |
| 65 | 7540 |



IX - FASTENING THE RACKS

The racks of the additional rolling tracks are to be fitted on the site.

Fix the new rack lengths of **R30** 1m and 2m (1.5m with the option 0703 0670) after the basic rack without locking them with the screws **R33** and the parts **R32**.

At the end, put back the two parts **R37** and **R39**.

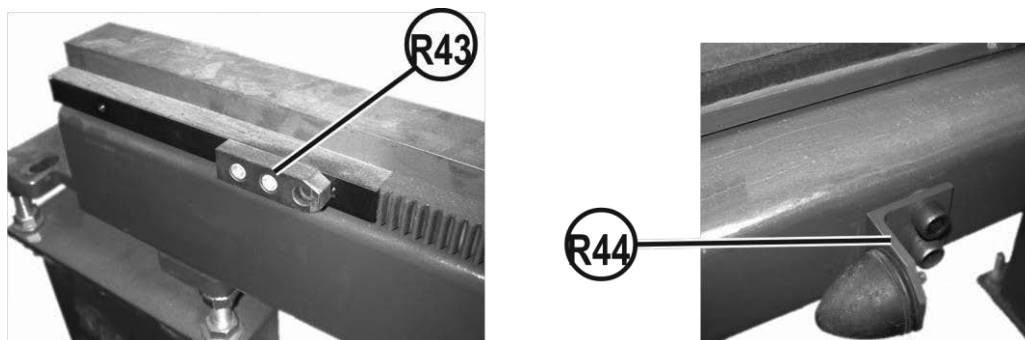
Lock the racks after first adjusting the longitudinal position with the tool **R40** and the height with the tool **R36**.

Note: On the rack of the 1.5m extension, the end with two teeth removed is to be fitted on the side ref. **38**.

TIP: to adjust the racks, start at the middle of the total length of the rolling track, and visually centre the first screw **R33** in the line of the rail hole.

X - FITTING MACHINE LIMIT CAMS

Fix the cams **R43** on the drawn part **R39** .



XI - FITTING THE MECHANICAL MACHINE STOPS

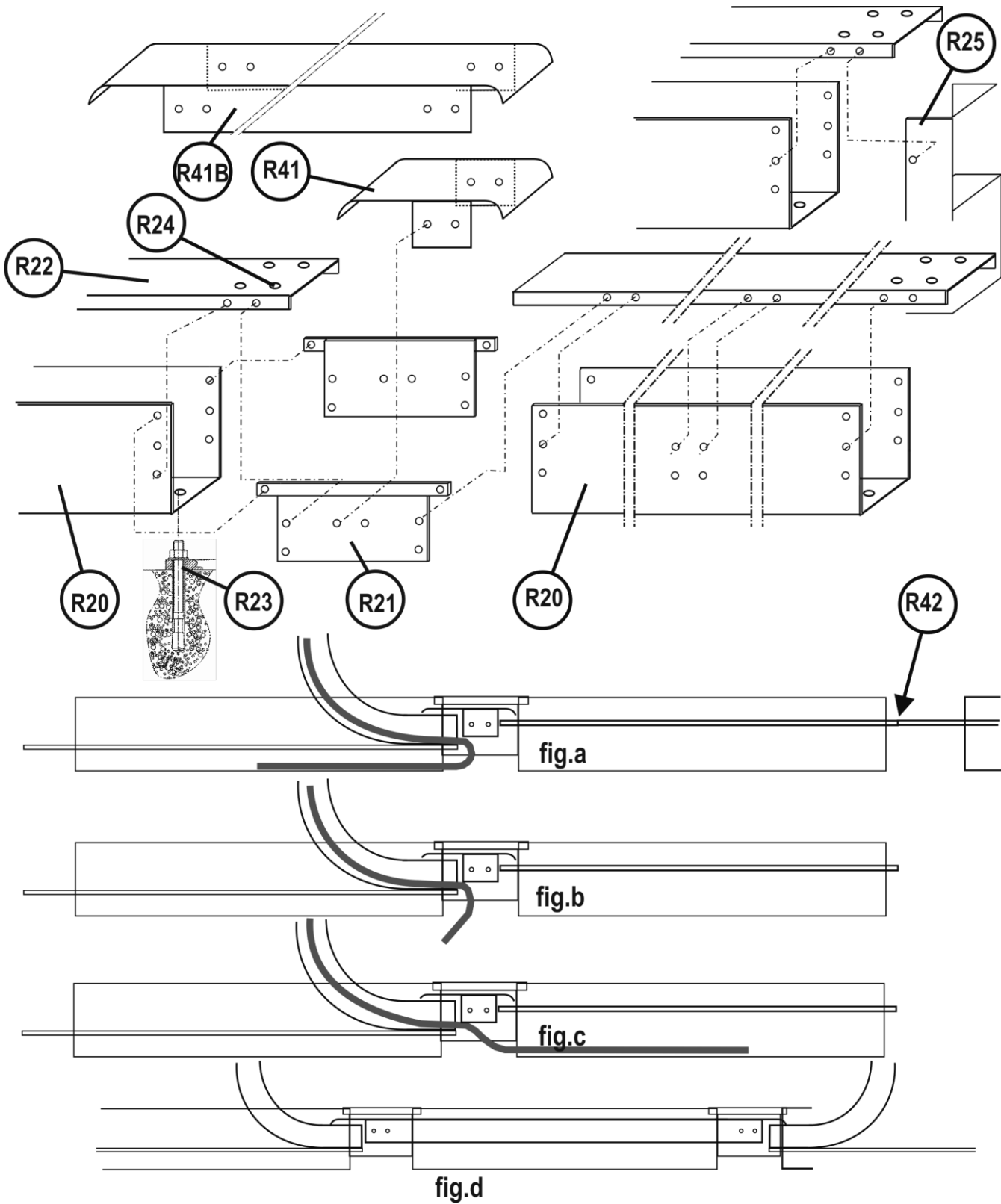
Take off the support and the stop R44 and fix them at the end of the rolling track

XII - FITTING THE MACHINE HOME CAMS (WITH OPTION)

Refer to the instructions 8695 4320

4 - PUTTING IN PLACE THE SUPPORTS OF THE CABLE DRAG CHAIN ON THE FLOOR

NB: for each overhead chain, refer to the supplied assembly drawing.

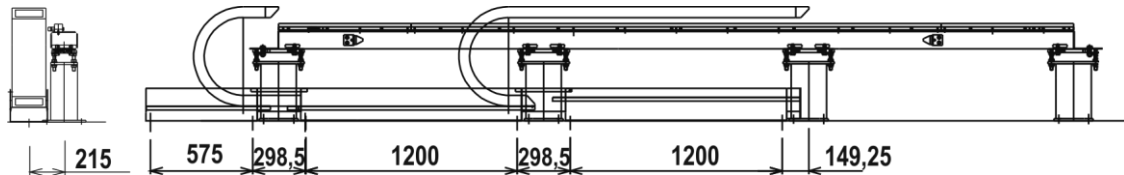


Chain supports are made up of several elements **R20** fixed to the floor (two supports for a basic machine), joined to each other by two joining pieces **R21**.

An intermediate plate **R22** is fixed to the supports and allows cables and pipes to pass underneath.

- INSTALLATION

Draw the line of the ducts with the chalk line



- Place the duct supports **R20** on the floor and fix them by counter drilling (same anchors as the feet) using two anchors per support, without locking them (according to the fastening plan below)
The 625mm long support is to be placed at the rear end (and a second one to the front for head-to-tail assembly)
- Join the two elements with the joining pieces **R21** using countersunk head screws (head inside so that nothing protrudes into the way of the passing of the chain)
- Line up and **check the parallel adjustment in relation to the rail** of the different elements before locking them on the floor.
- Fix the supporting plates **R22 imperatively with the eight fastening screws** at the recommended height
 - at the top for the front of the machine
 - at the bottom for the rear of the machine
 - at the bottom over the entire length for head-to-tail assembly (in the central part, the plate **R22** is replaced by **R41B** fig D)
- Make sure that the joins of the upper plates **R42** are correct to avoid premature wear and tear of the chain
- Fix the chain end guard piece **R41**
- Fix the front guard **R25**

Depending on the arrival of the utilities, you can bring the cables out in three different ways, as shown in figures a, b and c.

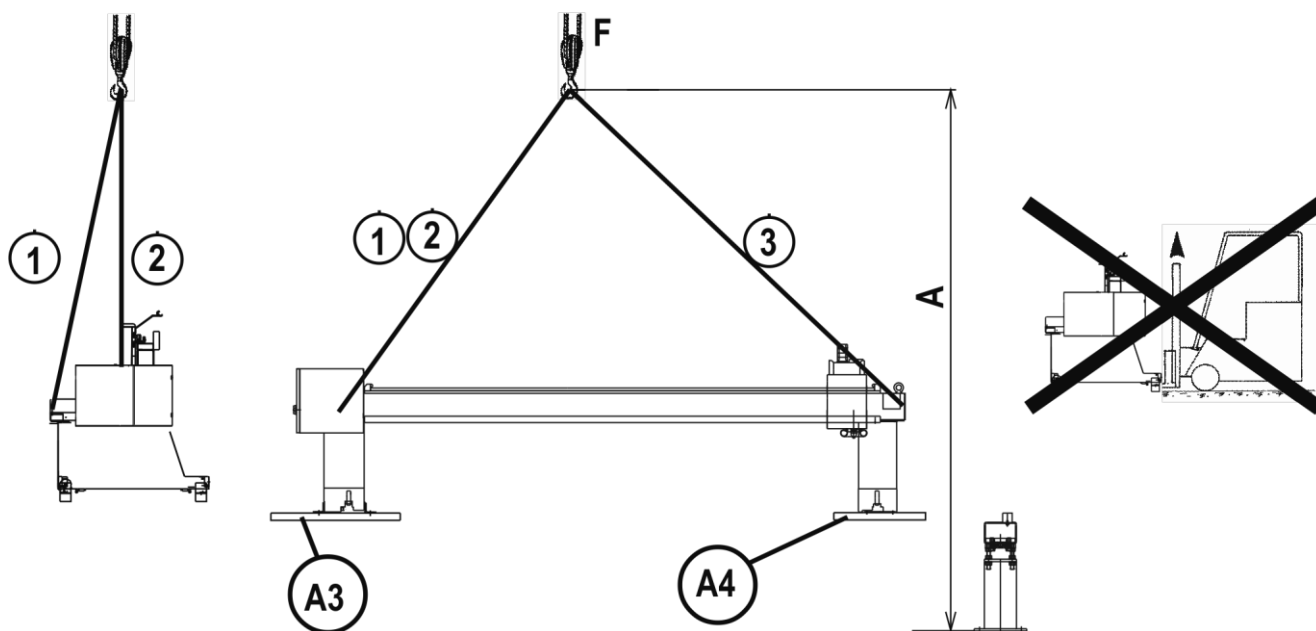
5 - PUTTING THE MACHINE IN PLACE

I - LIFTING THE MACHINE

The components of the installation may only be transported using the slinging points provided, with appropriate slinging equipment.

| | 15 | 20 | 25 | 30 | 35 | 40 |
|-----------------------------------|---------|---------|---------|---------|---------|---------|
| F | 900daN | 1000daN | 1100daN | 1200daN | 1300daN | 1400daN |
| A (minimum) | 2900mm | 3800mm | 4000mm | 4500mm | 4500mm | 4700mm |
| sling 1 | 1750mm | 2700mm | 2850mm | 3400mm | 3700mm | 3700mm |
| sling 2 | 1520mm | 2500mm | 2650mm | 3250mm | 3350mm | 3500mm |
| sling 3 | 2775mm | 3300mm | 3450mm | 4000mm | 4150mm | 4300mm |
| bearing capacity of slings | 3000daN | | | | | |

| | 45 | 50 | 55 | 60 | 65 |
|-----------------------------------|---------|---------|---------|---------|---------|
| F | 1600daN | 1800daN | 1900daN | 2000daN | 2100daN |
| A (minimum) | 5000mm | 5000mm | 5300mm | 5300mm | 5500mm |
| sling 1 | 4050mm | 4400mm | 4800mm | 5150mm | 5500mm |
| sling 2 | 3900mm | 4200mm | 4600mm | 4900mm | 5200mm |
| sling 3 | 4650mm | 5000mm | 5200mm | 5400mm | 5600mm |
| bearing capacity of slings | 4000daN | | | | |



Operator protection:
Helmet - Gloves - Safety shoes

II - INSTALLING THE MACHINE

The machine is supplied with the packing required for transport. Proceed as follows before placing the machine on the rails:

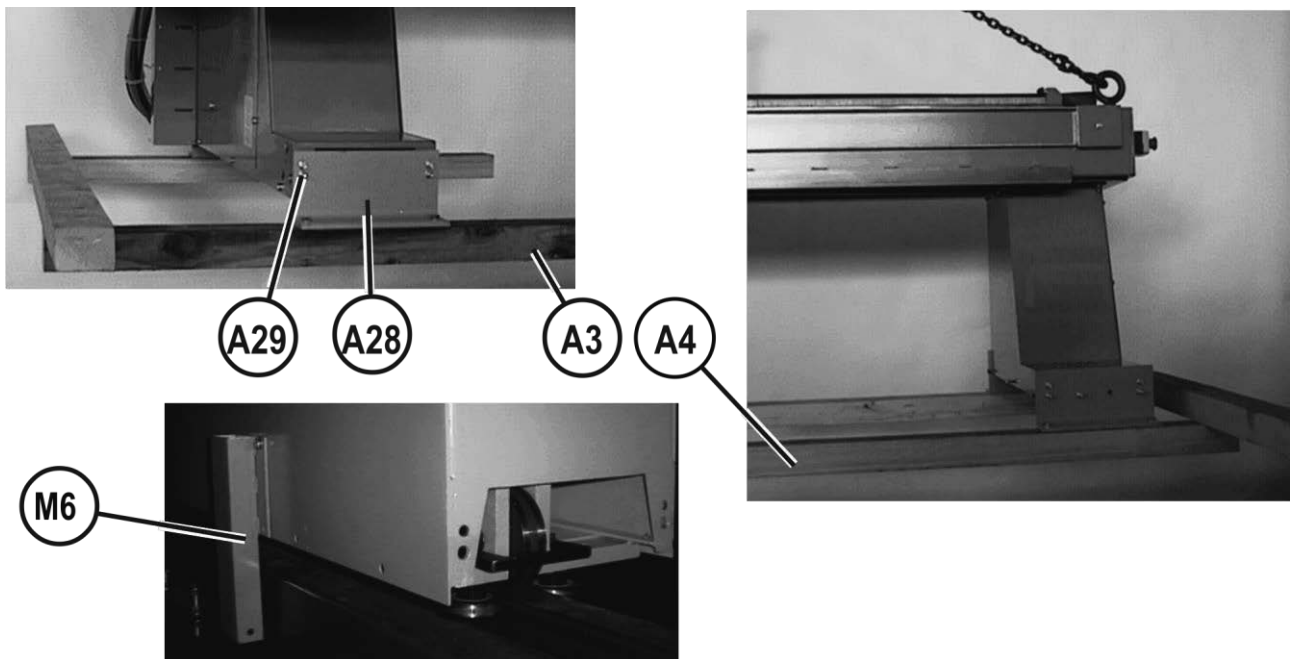
Lift the machine as instructed

Remove the wooden blocks **A3** and **A4** and the fixing brackets **A28** by unscrewing the nuts and screws **A29**

Take off the stop M6 and rotate it over 180° and put it back

Place the machine, first putting the end carriage in place on the main rail by guiding the assembly to introduce the guide rollers on the rail and the drive pinion.

NB: check the introduction of the drive pinion near the secondary rail



III - ADJUSTING THE ROLLERS

Adjust the two outer guide rollers **M4** on the main end carriage using the eccentric pins, by releasing the nut **M5** and the screw **M81** .

DO NOT OVER-TIGHTEN! The rollers must allow turning by hand. Lock the nut **M5**

Do not upset the inner rollers M11, they are factory set

IV - ADJUSTING THE POWER SYSTEMS

Push the pinion into the rack at the back of the teeth.

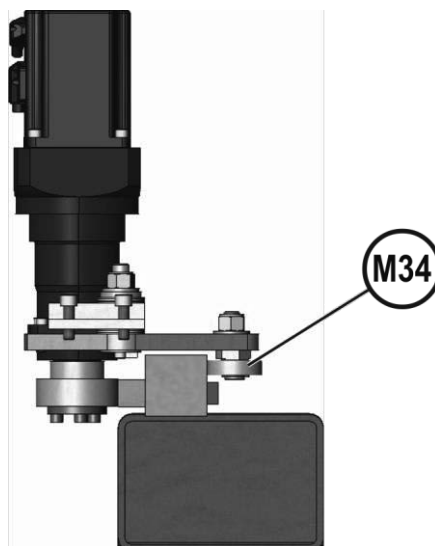
Adjust the companion roller using the eccentric pin.

DO NOT OVER-TIGHTEN! The roller M34 must allow turning by hand.

Proceed similarly near the secondary end carriage.



do not apply any stress on the machine to insert the pinion in the rack near the secondary rail; turn the pinion by hand if required, so that the teeth are opposite those of the rack.



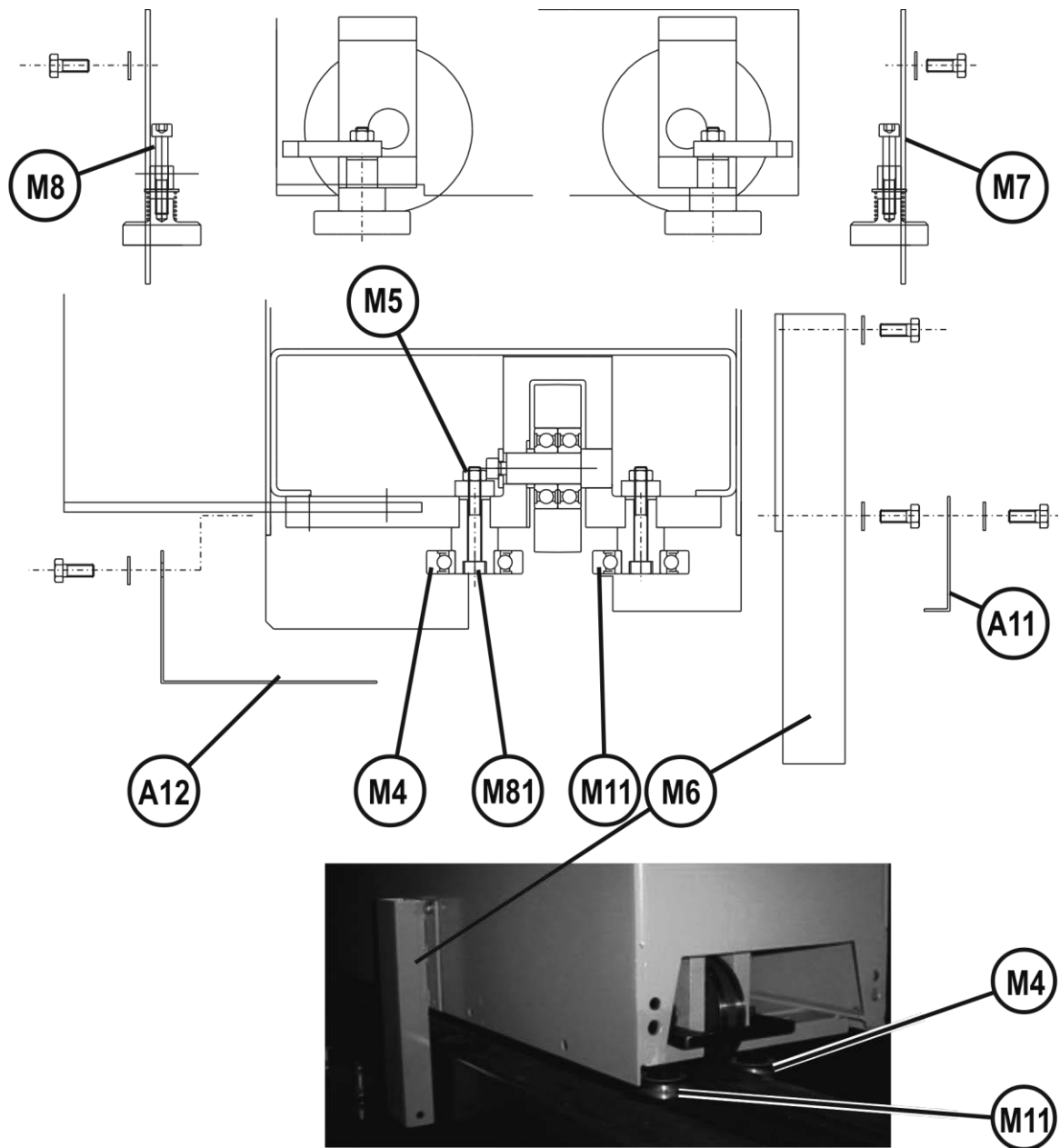
V - COVERING

Fix the end covers **M7** and **M8** of the main end carriage.

Fix the side guard plates **A11** and **A12**.

Fix the end covers **M7** and **M8** near the secondary end carriage.

Fix the side guard plates **A13** and **A14**



VI - PREPARING THE CABLE DRAG CHAIN

See chain layout drawing no. 0409 6422

6 - CONNECTING THE UTILITY SUPPLIES

Please refer to the location and energy supply drawings supplied



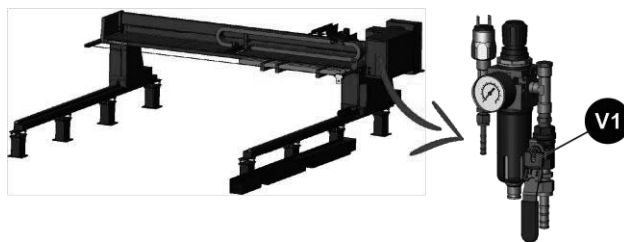
YOUR MACHINE IS WIRED FOR A 400V NETWORK

- It may be connected to a 230V network providing the coupling on the transformer **T1** placed in the main end carriage is changed, and the fuses ref.**FU1** are changed.

E - OPERATOR MANUAL

1 - SWITCHING ON THE MACHINE

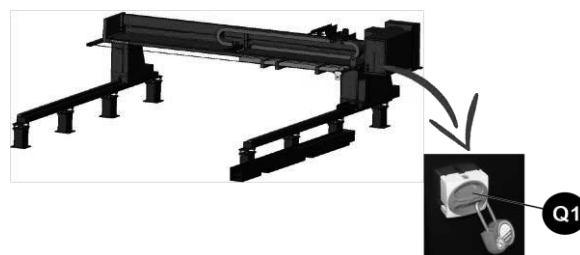
- Open the compressed air valve "V1".



- Power up the machine by moving the switch Q1 to the position I.

The indicator T15 will go on.

- With an optional plasma installation, switch on the cutting power source and the cooler (see cooler instructions).



This machine operates with an HPC DIGITAL PROCESS HPi control system

with a touch screen.

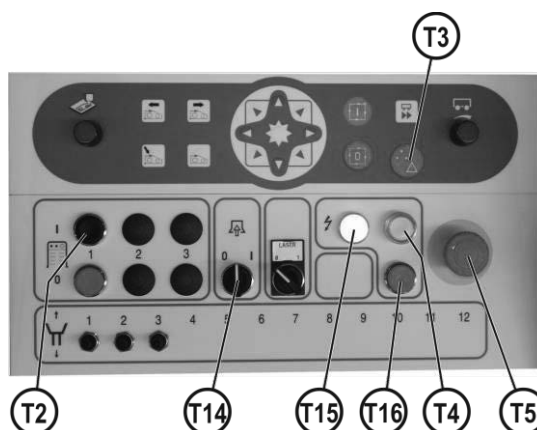
When the power is switched on, the **HPC DIGITAL PROCESS HPi** control system is initialised. (approximately 1 min).

At the end of the initialisation process, the screen displays:



- Press the button T4 to start up the machine. The button T4 will light up
- If the button does not light up, check that the emergency stops T5 and at the end of the beam are released
- Start up the extraction system using the switch T14.

NB: the button T16, which is the main stop, does not stop the extraction system.



- When it starts up, **HPC DIGITAL PROCESS HPI** indicates the plasma installation starting up faults.
- To put the plasma installation into service, press the button **T2**.
- The lamp **T3** will light up and the messages will be displayed on the screen display bar. Click the bar and follow the instructions.

The machine is now ready to operate

The **HPC DIGITAL PROCESS HPI** control system can manage the cutting parameters depending on the equipment and the material to cut, associated with workpiece programs.

The workpiece programs are taken from standard shapes or imported from a CAD system

The association of a workpiece program and cutting parameters constitutes a JOB, which can be saved.

Each program and each job can be copied, edited or exported.

There are several ways to cut a workpiece:

- ◆ Select a JOB to make a workpiece that has already been made
- ◆ Select a program, then the material and cutting performance
- ◆ Select a standard shape, enter its dimensions and then the material and cutting performance (for a new workpiece)

For more details about the use of HPC DIGITAL PROCESS HPI please refer to the



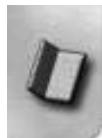
instruction 8695 4948 or click at the bottom right at any time for help about the current screen.

2 - STOPPING THE MACHINE



Before switching off the power to the machine, it is imperative to stop the **HPC DIGITAL PROCESS HPI**.

To stop the HPC system, go to tab 1 by clicking



press



and then confirm with



If the operator is away for an extended period of time or if any work is done on the cutting tools, the utility supplies must absolutely be shut off

Caution! The rotary switch to the left of the console only isolates the gantry machine, but not the plasma cutting process.

F - MAINTENANCE

1 - SERVICING

- So that the machine continues to provide good service for as long as possible, a certain minimum of care and maintenance is necessary
- The frequency of this maintenance work is given on the basis of the production of one work station per day. Maintenance should be more frequent if production is greater.

Your maintenance department may photocopy these pages so that it can follow up maintenance dates and operations (tick as appropriate)

Also see the instructions of the different options for maintenance.



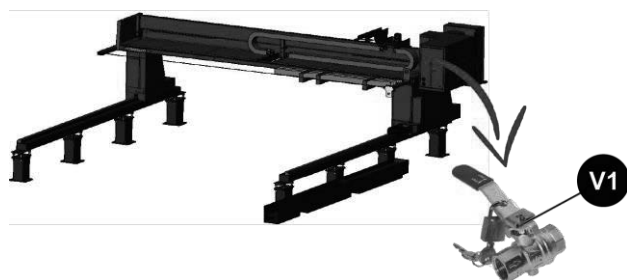
IMPORTANT: While handling sheets, take the necessary precautions to avoid impacts on the machine and the rolling tracks.
Impacts on any of the elements can lead to squareness faults or the malfunctioning of the electrical shaft and therefore incorrect cutting of the workpieces.



Before working on the machine, it is **MANDATORY** to lock out all the supplies of utilities to the machine (electricity, air, gas etc.).
Locking an emergency stop button is not sufficient.

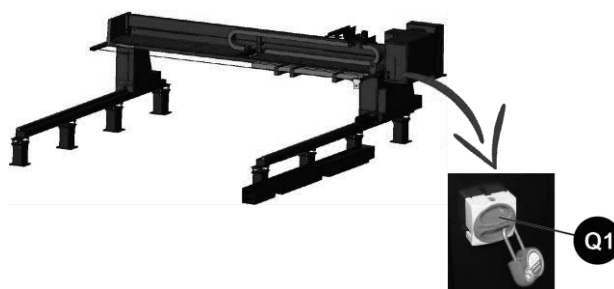
Pneumatic locking out:

Pneumatic locking out is achieved by means of the disconnecting valve « V1 ».



Electrical locking out:

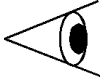

Electrical locking out is achieved by means of the disconnecter « Q1 ».

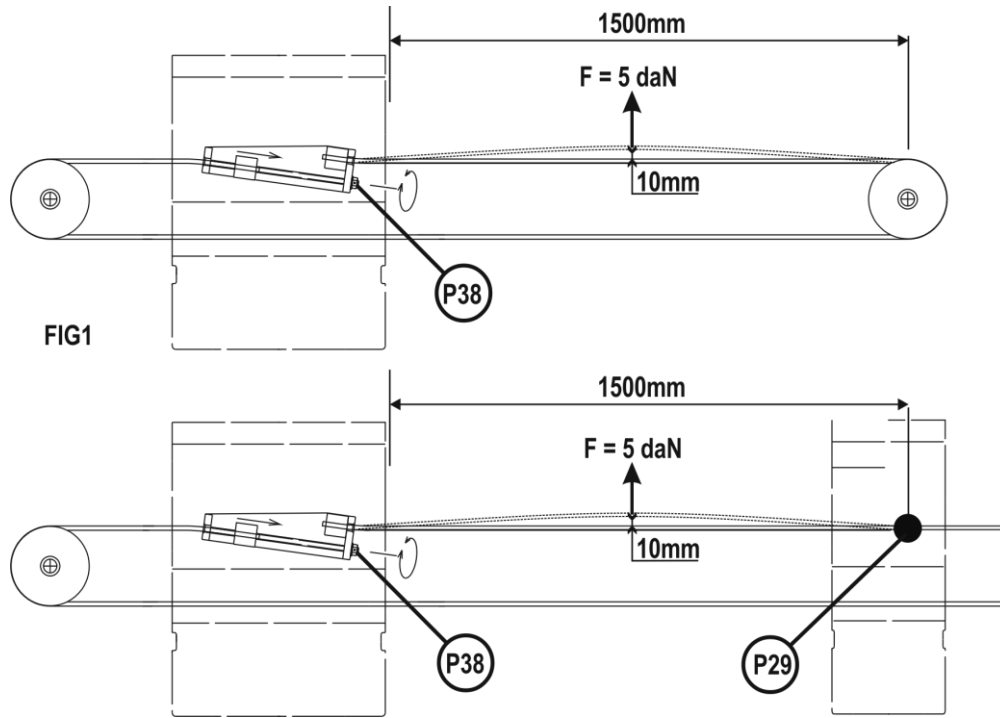


IMPORTANT: All work at heights (maintenance, troubleshooting etc.) on the machine must be carried out with appropriate personnel lifting equipment.

Weekly

Date of maintenance : / /

| | |
|---|---|
|  | - Check the condition of the guard gussets of the torch holders: replace if necessary. |
|  | - Brush the racks to remove any adhering material. |
| | <p>- Regularly clean all the rollers and rails:</p> <ul style="list-style-type: none"> ➤ end carriage rollers ➤ carriage rollers ➤ rolling track rails ➤ beam guiding rails. <p>Clean with a dry cloth or a cloth moistened with solvent, such as solvent naphtha or white spirit. (If necessary, spray Adermos 800 coating from Molydal on the surfaces of the guide rails and racks).</p> |
| | - Clean the machine overall, in order to remove dust. |
| | - Check the pneumatic circuit (see following page). |
| | <p>- Clean the screen of the HPC:</p> <ul style="list-style-type: none"> ➤ switch off the numerical control system ➤ use soap solution and a lint-free cloth (do not use solvents or abrasive products). |



monthly

Date of maintenance : / /



- Check the proper working of the gas circuit: pressure gauge, pressure reducer valve, solenoid valve, valve, fittings etc.
NB: any piping with the slightest sign of fatigue, wear or damage must be replaced by an identical standardised pipe.
- Check the condition of all electrical cables, particularly close to the torches and the cable drag chain (change them if required).
- Check the adjustment of the rollers and companion rollers that guide the end carriage and the tool-holder carriages They must be pressed, with the possibility to turn them by hand.
- Check the scrapers. These must press against the rail slightly.
- Check the wear and tear of the drive pinions and racks.
- Check the tension of the drive cable of slave carriages (Fig.1). If the cable is worn or frayed, it must be changed as soon as possible.
- FILTER PNEUMATIC CIRCUIT**
- To keep the filter maximally effective and prevent head loss, it must be cleaned regularly. Standard filters have a semiautomatic purge for clearing any build-up in the tank.
- That semiautomatic purge operates when the air is cut off in the upstream pipe.
- In the event of continuous operation, provide for a periodic manual manoeuvre of the purge.
- The filter must be cleaned whenever a visible concentration of impurities and/or excess pressure loss are observed
- Alcohol may be used for cleaning. Then blow the inside the filtering element.
- Before reassembly, apply 1000 bulles leak tester or soapy water on the thread.
Never apply greasy material in any form (oil or grease).

2 - TROUBLESHOOTING

Please refer to:

- ⇒ The electrical diagram supplied or,
- ⇒ The instructions of **HPC DIGITAL PROCESS HPI** (8695 4948) or,
- ⇒ The instructions of the different options.

Alarm display list 1/2

| 0x1001 Error Register | 0x603F Error Code | 0x2001 0x2002 Code | Alarm name | Alarm contents | Detection Operations | Alarm Reset |
|-----------------------------|-------------------------|---------------------------------|---|--|-------------------------|----------------|
| Bit4 | 0x7510 | 0x10 | Port 0 Rx Invalidity Frame Error | * Received invalid frame successively at Port 0 | SB | Yes |
| | | 0x11 | Port 1 Rx Invalidity Frame Error | * Received invalid frame successively at Port 1 | SB | Yes |
| | | 0x12 | Port 0 Rx CRC Error | * Port 0 Successive Rx error | SB | Yes |
| | | 0x13 | Port 1 Rx CRC Error | * Port 1 Rx occurrence error | SB | Yes |
| | | 0x14 | Port 0 Tx Error | * Port 0 Successive TX error | SB | Yes |
| | | 0x15 | Port 1 Tx Error | * Port 1 TX occurrence error | SB | Yes |
| | 0x7520 | 0x18 | Port 0 Lost link | * Port 0/1 cable was disconnected or unplugged in | SB | Yes |
| | | 0x19 | Port 1 Lost link | servo-on state. Host power supply was shutdown. | SB | Yes |
| 0x7510 | 0x1A | Communication time out | * Did not receive output data within regulated cycle time | SB | Yes | |
| Bit1 | 0x5400 | 0x21 | Main Circuit Power Device Error (Power Device Error) | * Over current of drive module | DB | Yes |
| | | | | * Abnormality in drive power supply | | |
| | 0x5210 | 0x22 | Current Detection Error 0 | * Abnormality of electric current detection value | DB | Yes |
| | | 0x23 | Current Detection Error 1 | * Abnormality of Electric current detection circuit | DB | Yes |
| | | 0x24 | Current Detection Error 2 | * Abnormality in communication with Electric current detection circuit | DB | Yes |
| 0x8312 | 0x25 | Safe Torque (force) Off Error 1 | * Timing error of safe torque (force) off input | SB | No | |
| | 0x26 | Safe Torque (force) Off Error 2 | * Failure of safe torque (force) off circuit | SB | No | |
| Bit1 | 0x8311 | 0x41 | Overload 1 | * Failure of safe torque (force) off circuit | SB | Yes |
| | 0x2220 | 0x42 | Overload 2 | * Stall over load | DB | Yes |
| | 0x3212 | 0x43 | Regenerative Overload | * Regeneration load ratio exorbitance | DB | Yes |
| | 0x7300 | 0x44 | Magnetic pole position detection error | * CS detection error | — | Yes |
| | 0x8400 | 0x45 | Average continuous over speed | * Over speed in average rotational speed | SB | Yes |
| Bit3 | 0x4110 | 0x51 | Servo Amplifier Temperature Error | * Overheating detection of amplifier ambient temperature | SB | Yes |
| | 0x4210 | 0x52 | RS Overheat | * Detection of in-rush prevention resistance overheating | SB | Yes |
| | | 0x53 | Dynamic Brake Resistance Overheat | * Overheating detection of dynamic brake resistor | SB | Yes |
| | 0x4310 | 0x54 | Internal Regenerative Resister Overheat | * Overheating detection of Internal regeneration resistor | DB | Yes |
| | 0x4310 | 0x55 | External Error | * Abnormality of external regenerative resistor, etc. | DB | Yes |
| | 0x4210 | 0x56 | Main Circuit Power Device Overheat | * Overheating detection of Drive module (15, 30, 50A) | DB | Yes |
| Bit2 | 0x3211 | 0x61 | Over-voltage | * DC Excess voltage of main circuit | DB | Yes |
| | 0x3220 | 0x62 | Main Circuit Under-voltage ※1) | * DC Main circuit low voltage | DB | Yes |
| | 0x3130 | 0x63 | Main Power Supply Fail Phase ※1) | * 1 phase of the 3 phase main circuit power supply disconnected | SB | Yes |

| 0x1001 Error Register | 0x603F Error Code | 0x2001 0x2002 Code | Alarm name | Alarm contents | Detection Operations | Alarm Reset |
|-----------------------------|-------------------------|--------------------------|--|--|-------------------------|----------------|
| Bit2 | 0x5114 | 0x71 | Control Power Supply ※2) Under-voltage | * Control power supply low voltage or instantaneous stoppage occurred | DB | Yes ※3 |
| | 0x5115 | 0x72 | Control Power Supply Under-voltage 1 | * Under voltage of ±12V of control switching power supply | SB | Yes |
| | 0x5113 | 0x73 | Control Power Supply Under-voltage 2 | * Under voltage of ±5V of control switching power supply | DB | Yes |
| Bit0 | 0x7305 | 0x81 | Encoder Connector 1 ※4) Disconnection | * Incremental encoder (A, B, Z) signal line break * Power supply cable break | DB | No |
| | 0x7306 | 0x83 | Encoder Connector 2 ※4) Disconnection | * Full close encoder (A, B, Z) signal line break * Power supply cable break | DB | Yes |
| | 0x7300 | 0x84 | Serial Encoder Communication Error | * CRC, SYNC, FORM, Command error occurrence in communication with sensor | DB | No |
| | | 0x85 | Encoder Initial Process Error | * CS data read failure of Incremental encoder * Initial processing abnormality of Absolute encoder * Cable break | - | No |
| | | 0x86 | CS error | * Position skip of CS data | DB | No |
| | | 0x87 | CS Signal Disconnection | * CS signal line break | DB | No |

Alarm display list 2/2

| 0x1001 Error Register | 0x603F Error Code | 0x2001 0x2002 Code | Alarm name | Alarm contents | Detection Operations | Alarm Reset |
|-----------------------------|-------------------------|--------------------------|--|---|-------------------------|----------------|
| Bit0 | 0x7300 | 0xA0 | Serial Encoder Internal Error 0 | * Absolute encoder rotation overflow * Frequent rotation counter overflow | DB | No |
| | | 0xA1 | Serial Encoder Internal Error 1 | * Multi-turn error * Battery low voltage | DB | Yes |
| | 0x7310 | 0xA2 | Serial Encoder Internal Error 2 | * Accelerate error | DB | ※ 5 |
| | 0x7310 | 0xA3 | Serial Encoder Internal Error 3 | * Over-speed error | DB | ※ 5 |
| | 0x7300 | 0xA4 | Serial Encoder Internal Error 4 | * Access error of Encoder internal EEPROM | DB | ※ 5 |
| | | 0xA5 | Serial Encoder Internal Error 5 | * Detection of single rotation coefficient incorrect | DB | ※ 5 |
| | | 0xA6 | Serial Encoder Internal Error 6 | * Detection of multiple rotation coefficient incorrect | DB | ※e 5 |
| | | 0xA9 | Serial Encoder Internal Error 9 | * Overheating of encoder with built-in servo motor | DB | ※ 5 |
| | 0x7320 | 0xAA | Serial Encoder Internal Error 10 | * Incremental error (Position data error) | DB | ※ 5 |
| | 0x7300 | 0xAC | Serial Encoder Internal Error 12 | * Multi-rotation error generation | DB | ※ 5 |
| | | 0xAD | Serial Encoder Internal Error 13 | * Encoder built-in EEPROM data is not set | DB | ※ 5 |
| | 0x7303 | 0xAE | Serial Encoder Internal Error 14 | * Resolver output abnormality | DB | ※ 5 |
| | 0x7304 | 0xAF | Serial Encoder Internal Error 15 | * Resolver disconnection | DB | ※ 5 |
| Bit0 | 0x8400 | 0xC1 | Over-speed | * Motor rotation speed is 120 % more than the highest speed limit | DB | Yes |
| | | 0xC2 | Velocity Control Error | * Nonconformity of electrical current command and acceleration signs | DB | Yes |
| | 0x7122 | 0xC3 | Velocity Feedback Error | * Servo motor power disconnection ※6) | DB | Yes |
| | 0x8500 | 0xC5 | Model tracking vibration suppression control error | * Machine cycle time is not mach with model tracking vibration suppression control. | DB | Yes |
| Bit0 | 0x8611 | 0xD1 | Excessive Position Deviation | * Position Deviation exceeds setup value. | DB | Yes |
| | 0x8500 | 0xD2 | Position Command Error 1 | * Position command exceeded setting range 0x201D | SB | Yes |
| | | 0xD3 | Position Command Error 2 | * Position command input exceeded processing range | SB | Yes |
| | 0xFF01 | 0xDE | Parameter change completion ※7) | * Parameter change of motor and sensor codes is complete | - | No |
| 0xFF00 | 0xDF | Test Run Close ※7) | * Detection in 'Test mode end' status | DB | Yes | |

| 0x1001 Error Register | 0x603F Error Code | 0x2001 0x2002 Code | Alarm name | Alarm contents | Detection Operations | Alarm Reset |
|-----------------------------|-------------------------|--------------------------|---|--|-------------------------|----------------|
| Bit7 | 0x5530 | 0xE1 | EEPROM Error | * Abnormality of amplifier with built-in EEPROM | DB | No |
| | 0x6310 | 0xE2 | EEPROM Check Sum Error | * Access error in CPU built in RAM EPROM (entire area) | — | No |
| | 0x5510 | 0xE3 | Memory Error 1 | * Access error in CPU built in RAM | — | No |
| | —※8) | 0xE4 | Memory Error 2 ※7) | * Error in check sum of Flash memory | — | No |
| | 0x6320 | 0xE5 | System Parameter Error 1 | * System parameter is outside a setting range. | — | No |
| | | 0xE6 | System Parameter Error 2 | * Combination of a system parameter is abnormal. * System parameter and amplifier mismatch | — | No |
| | 0x5220 | 0xE7 | Motor Parameter Error | * Check sum of a motor parameter is abnormal. | — | No |
| | | 0xE8 | CPU Circumference Circuit Error | * Abnormal access to CPU and peripheral devices | — | No |
| | 0x6320 | 0xE9 | System Code Error | * Control board code and sensor setting mismatch | — | No |
| | | 0xEA | Motor code setting Error | * Motor code is outside a setting range. | — | No |
| | | 0xEB | Sensor code setting Error | * Sensor code is outside a setting range. | — | No |
| | | 0xEE | Motor parameter automatic setting error 1 | * Motor parameter automatic setting disabled. | — | No |
| | | 0xEF | Motor parameter automatic setting error 2 | * The result of motor parameter automatic setting has an abnormality. | — | No |
| Bit7 | 0x8700 | 0xF1 | Task Process Error | * Error in interruption process of CPU | DB | No |
| | 0x6010 | 0xF2 | Initial Process Time-Out | * Initial process does not end within initial process time | — | No |
| —※9) | —※8) | 0xFF | Self flash timeout ※7) | * Self-flash re-writing procedure is completed within the specified time. | — | No |

| | |
|----|---|
| ※1 | When the main power voltage increases or decreases gradually or is suspended, main circuit low voltage or main power failed phase may be detected. |
| ※2 | Control power supply under-voltage or servo ready OFF is detected during instantaneous break of 1.5 to 2 cycles. Detection of control power supply under-voltage and servo ready OFF can be delayed by setting larger value of PFDDL Y (GroupB ID16). |
| ※3 | When moment cutting of a control power source is long, it regards in power supply interception and re-input, and does not leave detected control power supply under-voltage to an alarm history. (If cutting exceeds 1 second at the moment, it will be certainly judged as power supply interception.) |
| ※4 | Alarm 0x81 detection becomes invalid with EN1, EN2 input frequency of 100 kHz or more at the time of linear encoder setting. |
| ※5 | Detecting only Synchronization encoder. Due to abnormality in encoder main body, encoder clear may sometimes be needed. "An encoder clear and the alarm reset method" change with motor encoders in use. Please refer to "11.5 Encoder clear and the alarm reset method." |
| ※6 | When there is a rapid motor slow down simultaneous with servo ON, there is a possibility that a break in the motor's power line cannot be detected. |
| ※7 | Alarm activated at test mode completion, motor code, sensor code, alarm when changing, memory error 2, and self-flashtimeout are not stored in alarm-record. |
| ※8 | "Memory Error 2" shall not be set to object dictionary "0x603F." |
| ※9 | Self-flash timeout shall not be set to object dictionary "0x1001." |



IMPORTANT: The slave power system X is synchronised with the master X by a numerical setpoint from the master variable drive.

DO NOT REVERT THE SPEED VARIATORS they are programmed for their function.

3 - SPARE PARTS

How to order

The photos or sketches identify nearly every part in a machine or an installation

The descriptive tables include 3 kinds of items:

- those normally held in stock: ✓
- articles not held in stock: ✗
- those available on request: no marks

(For these, we recommend that you send us a copy of the page with the list of parts duly completed. Please specify in the Order column the number of parts desired and indicate the type and the serial number of your equipment.)

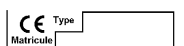
For items noted on the photos or sketches but not in the tables, send a copy of the page concerned, highlighting the particular mark.

For example:

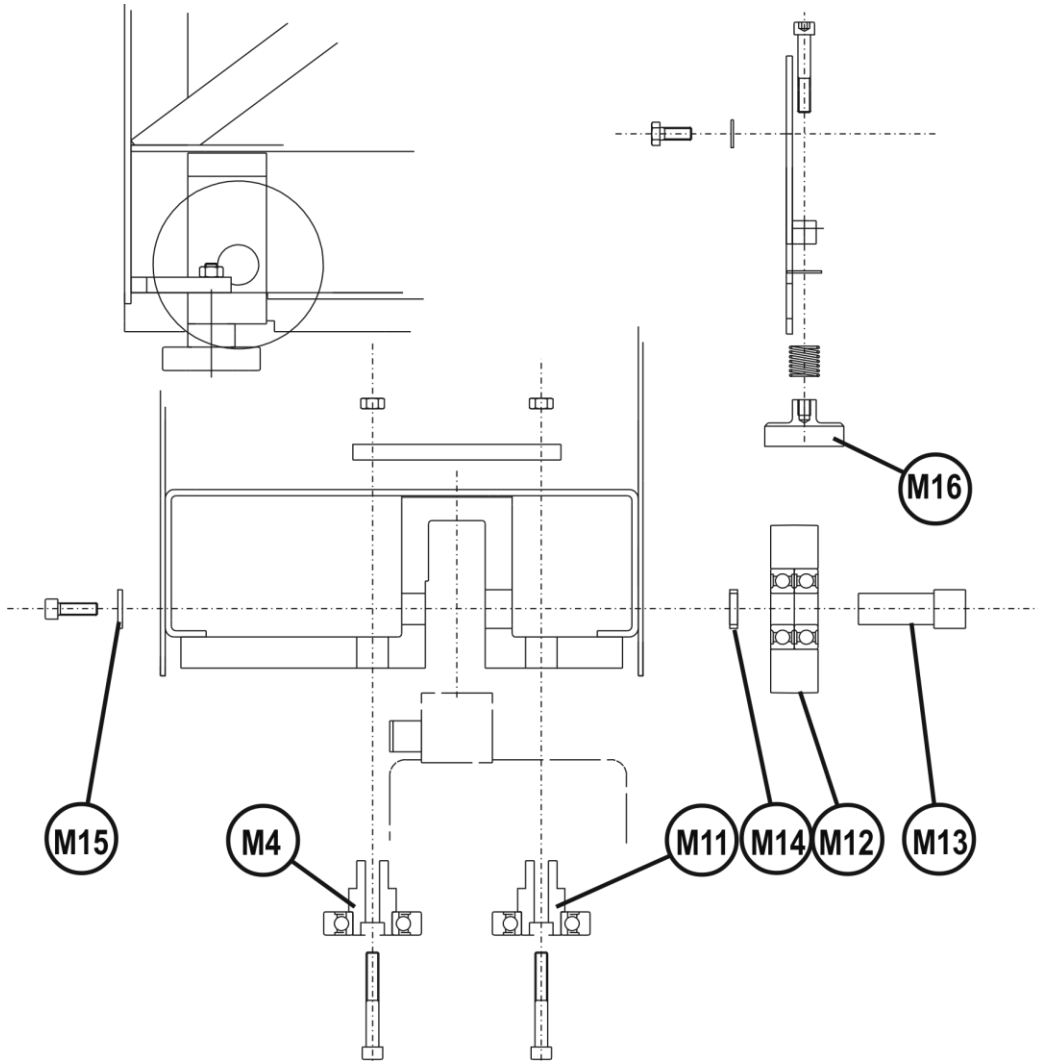
| Item | Ref. | Stock | Order | Designation |
|------|------------|-------|-------|---------------------------------|
| 1 | W000XXXXXX | ✓ | | Machine interface board |
| 2 | W000XXXXXX | ✗ | | Flowmeter |
| 3 | 9357 XXXX | | | Silk-screen printed front panel |

| | |
|---|-------------------|
| ✓ | normally in stock |
| ✗ | not in stock |
| | on request |

- For parts order, give the quantity required and put the number of your machine in the box below.

| | |
|---|---------|
|  | TYPE: |
| | Number: |

MAIN END CARRIAGE



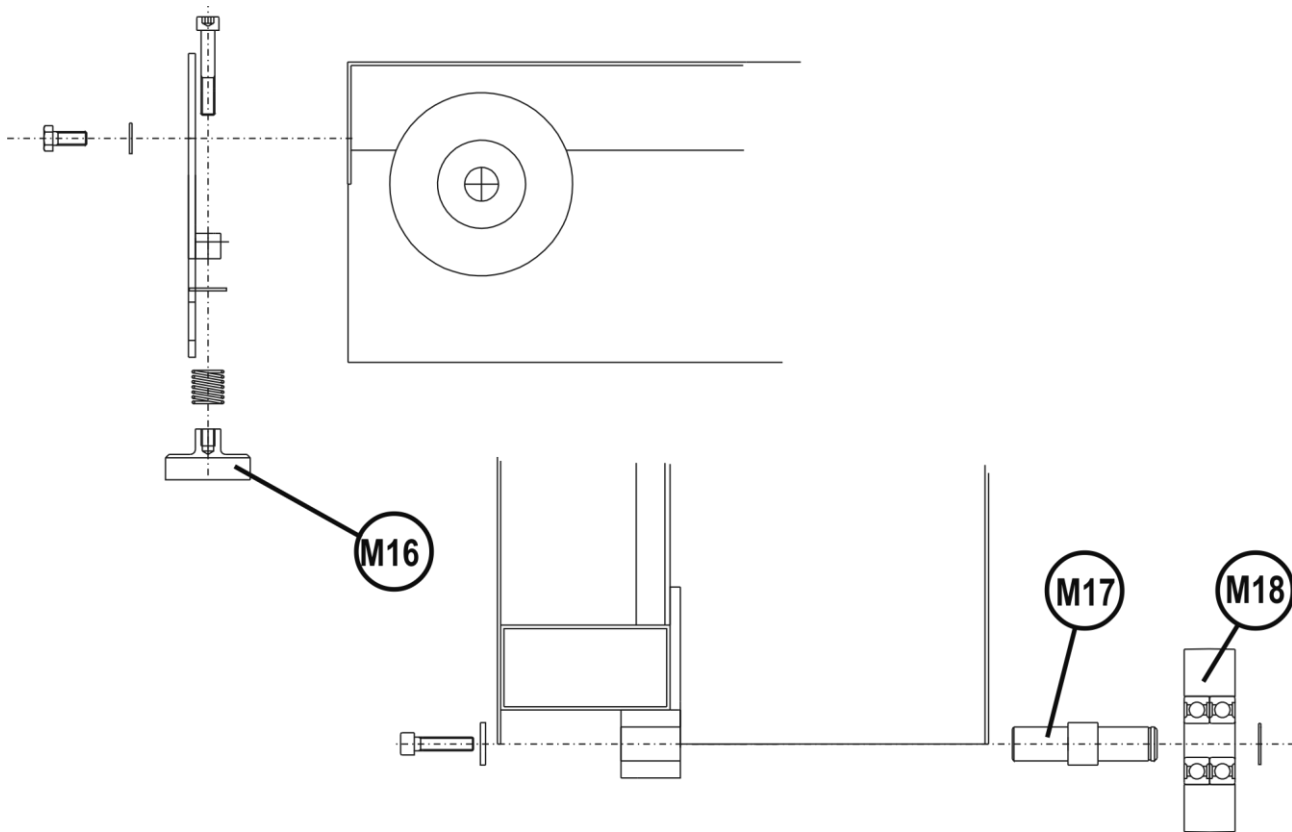
| | |
|---|-------------------|
| ✓ | normally in stock |
| ✗ | not in stock |
| | on request |

| Item | Ref. | Stock | Order | Designation |
|------|------------|-------|-------|---------------------------------|
| M11 | 0703 1143 | | | Equipped guide roller |
| M4 | 0703 1144 | | | Equipped eccentric guide roller |
| M12 | W000139036 | ✓ | | Equipped bearing roller |
| M13 | | | | Shaft |
| M14 | | | | Spacer |
| M15 | | | | Washer |
| M16 | W000139037 | ✓ | | Scraper (box of 4) |

➤ For parts order, give the quantity required and put the number of your machine in the box below.

| | |
|--|--|
| CE Type <input style="width: 80%;" type="text"/> Matricule <input style="width: 80%;" type="text"/> | TYPE: <input style="width: 95%;" type="text"/> Number: <input style="width: 95%;" type="text"/> |
|--|--|

SECONDARY END CARRIAGE



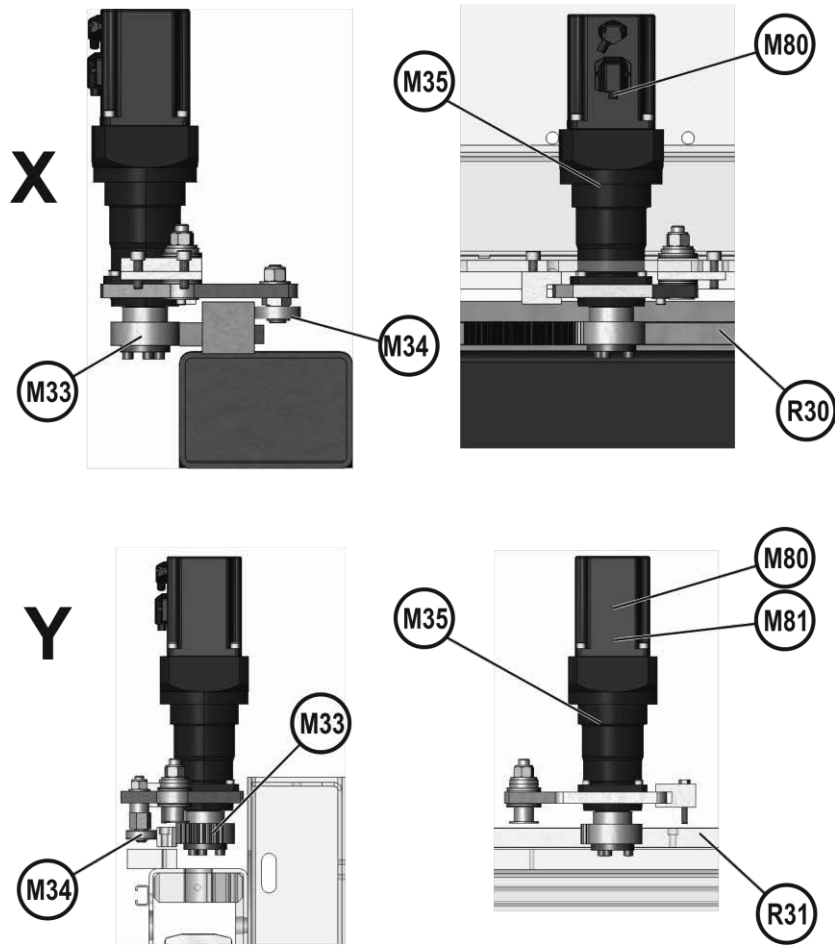
| | |
|---|-------------------|
| ✓ | normally in stock |
| ✗ | not in stock |
| | on request |

| Item | Ref. | Stock | Order | Designation |
|------|------------|-------|-------|-------------------------|
| M18 | W000139041 | ✓ | | Equipped bearing roller |
| M17 | | | | Shaft |
| M19 | | | | Washer |
| M16 | W000139037 | ✓ | | Scraper (box of 4) |

➤ For parts order, give the quantity required and put the number of your machine in the box below.

| | | | |
|--|--|--|------------------------------|
| | | | TYPE: _____ Number: _____ |
|--|--|--|------------------------------|

POWER SYSTEMS



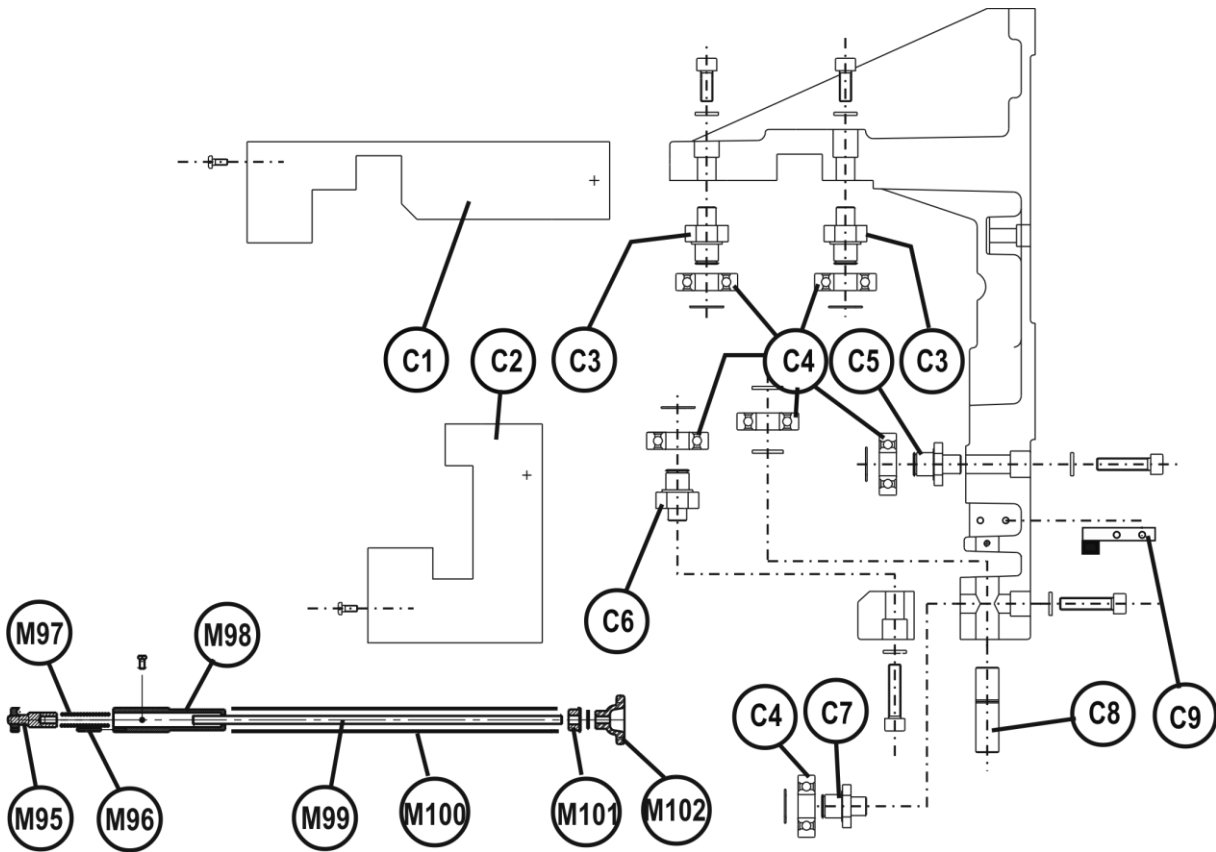
| | |
|---|-------------------|
| ✓ | normally in stock |
| ✗ | not in stock |
| | on request |

| Item | Ref. | Stock | Order | Designation |
|------------|------------|-------|-------|--------------------------------|
| M34 | W000139047 | ✓ | | Companion roller kit (2X + 1Y) |
| M80 | W000383969 | ✓ | | PLN70 I25 B5 reduction gear |
| | W000383967 | ✓ | | SANYO R2AA 750W motor |
| M81 | | | | INDEXAGE HPi option |
| | W000385166 | ✓ | | SANYO R2AA 750W ABS E motor |
| | W000385167 | ✗ | | SANYO R2AA 750W ABS E battery |
| R30 | 0703 0518 | | | 2m long rack |
| | 0703 0543 | | | 1m long rack |
| | 0703 0588 | | | 1.5m long rack |
| M33 | W000383968 | ✓ | | Z=30 M2 D24 pinion |
| R31 | 0703 2105 | | | 2m long rack |
| | 0703 2106 | | | 1832mm long rack |

> For parts order, give the quantity required and put the number of your machine in the box below.

| | |
|--|------------------------------|
| CE Type <input type="text"/> Matricule <input type="text"/> | TYPE: <input type="text"/> |
| | Number: <input type="text"/> |

TOOL CARRIAGE



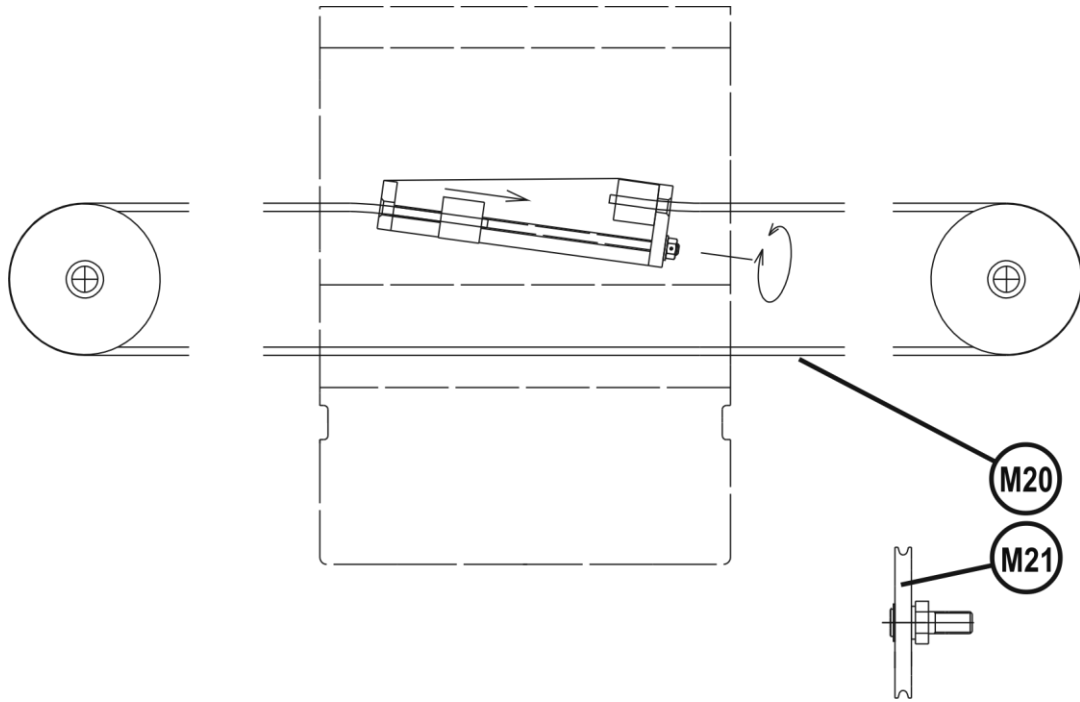
| | |
|---|-------------------|
| ✓ | normally in stock |
| ✗ | not in stock |
| | on request |

| Item | Ref. | Stock | Order | Designation |
|-------------|------------|-------|-------|-----------------------------|
| C1 | 0703 3528 | | | Upper guard |
| C2 | 0703 3529 | | | Lower guard |
| C3 | 0703 3504 | | | Eccentric upper shaft |
| C4 | W000139096 | ✗ | | Set of 6 rollers |
| C5 | 0703 3505 | | | Upper front shaft |
| C6 | 0703 3508 | | | Eccentric rear shaft |
| C7 | 0703 3506 | | | Eccentric lower front shaft |
| C8 | 0703 3507 | | | Front middle shaft |
| C9 | W000139095 | ✓ | | Right and left scraper |
| M95 | 0703 3832 | | | Cable tie. |
| M99 | 0703 3833 | | | M8 threaded rod. |
| M100 | 0705 3834 | | | Spacer tube. |
| M102 | 0705 3825 | | | M8 wheel. |

➤ For parts order, give the quantity required and put the number of your machine in the box below.

| | | | |
|--|--|--|---------|
| | | | TYPE: |
| | | | Number: |

SLAVE CARRIAGE DRIVE



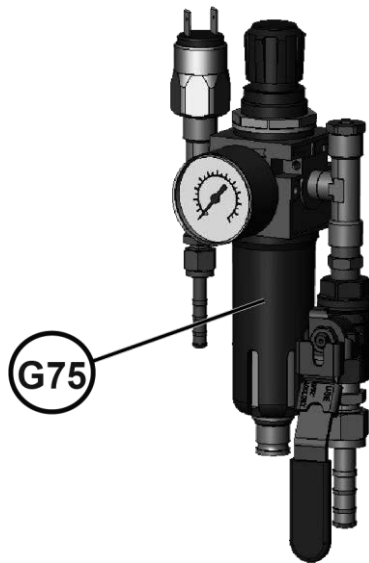
| | |
|---|-------------------|
| ✓ | normally in stock |
| ✗ | not in stock |
| | on request |

| Item | Ref. | Stock | Order | Designation |
|------|-----------|-------|-------|---|
| M20 | .610 5503 | | | Ø 6.3 x37 wire galvanised cable Length dependent on machine size |
| M21 | 0703 3806 | | | Equipped cable tension pulley |

➤ For parts order, give the quantity required and put the number of your machine in the box below.

| | |
|----------------------|---------|
| CE Type Matricule | TYPE: |
| | Number: |

PNEUMATIC EQUIPMENT



| | |
|---|-------------------|
| ✓ | normally in stock |
| ✗ | not in stock |
| | on request |

| Item | Ref. | Stock | Order | Designation |
|------------|------------|-------|-------|-----------------|
| G75 | W000365982 | ✓ | | Filter. |
| | W000365846 | ✓ | | Pressure switch |

➤ For parts order, give the quantity required and put the number of your machine in the box below.

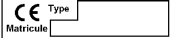
| | |
|--|---------|
| | TYPE: |
| | Number: |

CABLE DRAG CHAIN

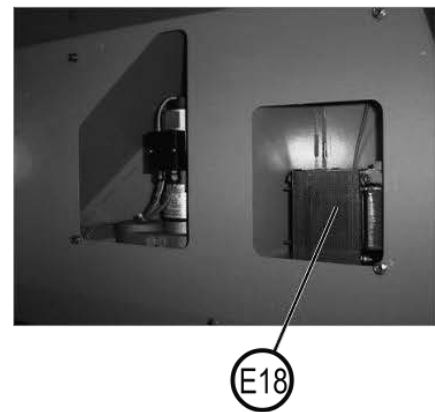
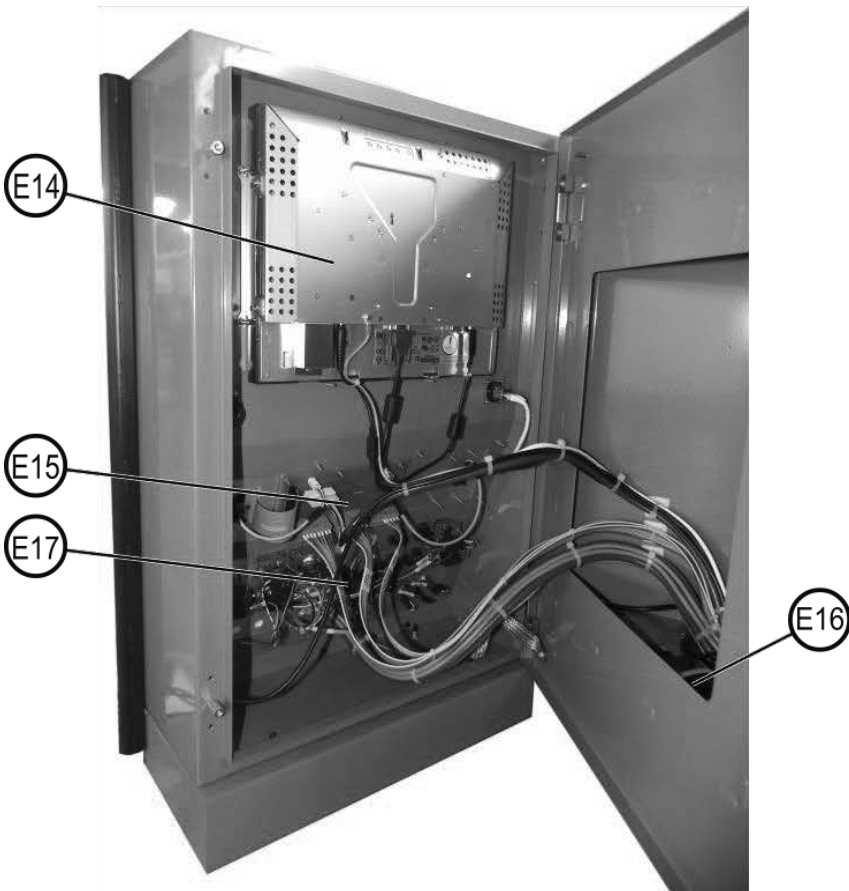
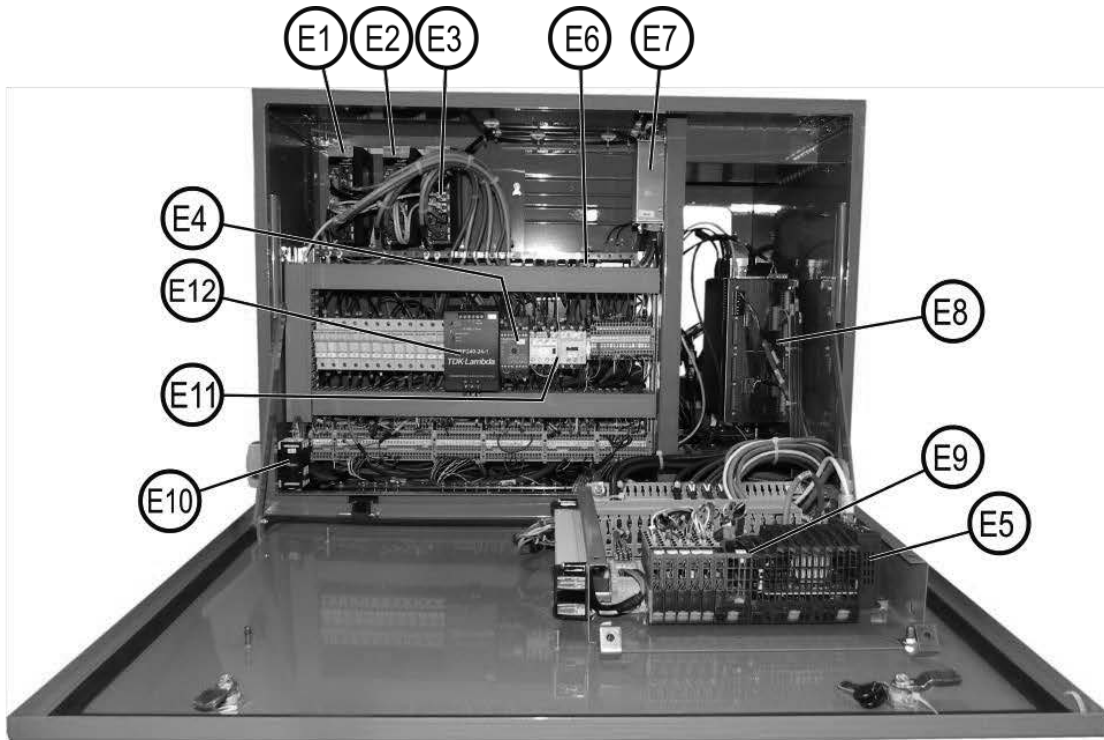
| | |
|---|-------------------|
| ✓ | normally in stock |
| ✗ | not in stock |
| | on request |

| Item | Ref. | Stock | Order | Designation |
|------|-----------|-------|-------|---------------------------------|
| | | | | LONGITUDINAL |
| | 0705 0650 | | | Full cable drag chain (1m long) |
| | 0705 0654 | | | Attachment kit |
| | | | | TRANSVERSE |
| | .620 3522 | | | Cable drag chain (1m long) |
| | .620 3518 | | | Attachment kit |
| | .620 3515 | | | Vertical divider |
| | .620 3520 | | | Horizontal divider |

➤ For parts order, give the quantity required and put the number of your machine in the box below.

| | | | | | |
|---|---|---|---|---|---------|
|  | → | → | → | → | TYPE: |
| | → | → | → | → | Number: |


ELECTRICAL EQUIPMENT



| | |
|---|-------------------|
| ✓ | normally in stock |
| ✗ | not in stock |
| | on request |

| Item | Ref. | Stock | Order | Designation |
|-------------------------------------|------------|------------|-------|--|
| E1 E2 E3 | W000383980 | ✓ | | 30A brushless variable drive |
| E4 | W000383972 | ✓ | | Safety module, XPSATE5110 |
| E5 | .570 3957 | | | Five-port Ethernet switch <i>(Network option)</i> |
| E6 | .560 8042 | | | 1A electrical filter |
| E7 | .560 8039 | | | 15A electrical filter |
| E8 | W000383976 | ✗ | | EL ETHERCAT CPU |
| E9 | 0409 7510 | | | Plasma base PLC |
| | W000383705 | ✗ | | X20 6E On/Off module |
| | W000383706 | ✗ | | X20 6S On/Off module |
| | W000383713 | ✗ | | X20 2E Analogue module |
| | 0705 7400 | | | HPi PLC base assembly |
| | W000383973 | ✓ | | X20 CPU PLC |
| | W000383701 | ✗ | | 512 MB Compact flash card |
| | W000383705 | ✗ | | X20 6E On/Off module |
| | W000383707 | ✗ | | X20 6S On/Off module |
| E10 | W000140748 | ✓ | | Sectioning switch, 3P 25A |
| E11 | W000137792 | ✗ | | LC1D12B7 contactor |
| | W000383974 | ✓ | | LADN40 additive contact |
| E12 | W000372753 | ✓ | | 230V/24VDC/10A power supply |
| E13 | W000372755 | ✗ | | Laser power supply <i>(Optional positioning laser)</i> |
| E14 E16 | W000383977 | ✓ | | 15" touch screen + power supply |
| | E15 | W000383978 | ✓ | |
| W000383979 | | ✓ | | Keyboard front |
| 0705 3294 | | | | Equipped front encoder |
| E17 | 0705 3170 | | | Switching on front |
| E18 | .570 6133 | | | 230+400V/24+24V - 4350VA transformer |
| E21 | W000372756 | ✗ | | Equipped SL GLM 12 laser with cross hairs <i>(Optional positioning laser)</i> |

➤ For parts order, give the quantity required and put the number of your machine in the box below.

| | |
|---|---------|
|  | TYPE: |
| | Number: |

