

### 7.1 Base

In order to maintain its machining accuracy, the machine should be installed in the customer's shop onto a concrete base, whose execution shall comply with the drawing append.

The base thickness will be set according to the ground nature and to the vibration sources around, as well.

Base dimensioning and armament shall be done by the shop designer, taking into account both the fixed and mobile loads, as indicated on the base drawing, appended.

The permitted bent of the base should not be more than 50% of the rectilinearity deviation value, i. e. 0,010 mm/m, and respectively 0,04 mm throughout its length.

Concrete casting shall be performed at least four weeks prior to the machine installation onto the base, for the concrete not to yield subsequently.

The location of the electric conductors input shall be set according to the customer's local possibilities, while building the base. It is recommended that both the machine installation onto the base and the assembly installation and adjustment to be performed by the supplier.

Under the influence of moving loads the rectilinearity deviation shall not be more than  $\pm 0,02$  mm/m and the verticality deviation shall not be more than the absolute value of 0,020 mm/m.

Cement mortar composition for device fastening into the base:

- 1 measure Portland 750 cement
- 1 measure 0,3 cm granulation sand
- 2 measures 0,7 cm granulation sand.

The water addition has to be choose in order that the mixture for dwellings to be paste (to pour).

The base body surfaces in contact with cement-mortar for devices fastening, shall be well-cleaned and moistened during two days before mortar pouring by vibrations.

The walls and the bottom of the decanter hole and of the hole for cooling unit tank and also the channels for cooling liquid draining shall be polished and isolated against cooling liquid infiltration.

Under the influence of moving loads the rectilinearity deviation shall not be more than  $\pm 0,02$  mm/m and the verticality deviation shall not be more than the absolute value of 0,02 mm/m; a,b - directions for devices placing onto the base.

All the devices will be adjusted at media quote of 110 mm.

At the a and b devices the respective extensions shall be mounted.

The devices shall be mounted in the foundation screws holes and the extensions shall be correctly oriented.

The bed, in this way prepared will be placed onto the base on two lateral rows of metallic auxiliary adjusting wedges so that the devices foundation screws and the extensions to be perfectly in the designed hole in the concrete body and filled up to 3/4 with soft cement mortar.

Immediately the bed vertical and horizontal alignment will be performed and then the holes will be filled with cement mortar from lateral sides. After 6 hours the foundation screws nuts shall be loosen in order to avoid the concrete tearing from the device sole the bed being sustained by the wedges.

After 14 days, the bed will be aligned once again by means of the device and the wedges shall be removed.

After that the nuts shall be firmly tightened the beds shall be relieved with tightened nuts.

Finally the device adjustment screws shall be locked.

### **7.2 Machine Installation and Alignment onto the Base**

For the machine to be installed the base drawings will be studied and the following mounting sequence will be kept:

- The beds shall be placed on two bearings. Each slot within the bed, plate shall be provided with a double-effect device for horizontality adjustment. The screws which are mounted within the end plate must be provided with plates and nuts, such as the upper side of the screw to be approx. 10 mm over the nut.

- The bed will be lowered onto the base by means of the horizontality adjustment devices, close to the base slots. The bed shall be supported by two steel plates, located at half distance between two adjoining screws, in order to allow a first leveling and base holes filling with cement water. The plates will be supplied by the customer.

- Cement water will be poured into the base holes. At least 48 hours after filling, the following operations should be achieved:

- The devices shall be handled such as the bed to be sustained by them; afterwards, the positioning screws of the devices onto the base shall be slowly screwed and the steel plates shall be removed.

- The beds guide ways shall be well cleaned by means of a duster imbided with oil and the bed shall be positioned both transversally and longitudinally by means of a level and leveling devices.

- The screw nuts of the bed plate will be screwed.

- Bed horizontality shall be checked and corrected.

- The slide assemblies shall be mounted as such:

- The beds guide ways shall be well cleaned with a duster imbided in oil. The slide assembly shall be lifted by means of cables and its surfaces of contact with the bed shall be cleaned.

- The slide assemblies shall be placed onto the bed after an abundant greasing of the bed guide ways.

•The ball screw nut of the slides shall be fixed by screws against the slide-sustaining surface.

•The beds guide ways closing plates shall be mounted.

•The column shall be lifted by means of cables.

•The contact surfaces shall be cleaned and lubricated with a thin layer of oil; subsequently the column shall be placed onto the column saddle.

•The column fixing screws shall be screwed.

•The headstock shall be lifted by means of cables, its guide ways shall be carefully cleaned, afterwards it is put in contact with the column guide ways, previously cleaned and greased with a thin layer of oil. In this case the headstock must be sustained by two wooden logs.

•The procedure continues by fixing the ball screw nut against the headstock sustaining surface.

•The cables between the headstock hydraulic balancing cylinder and the headstock is mounted by manual actuation of the headstock ball screw, then the sustaining bar of the counterweight shall be removed. Ball screw actuation shall be achieved by a wrench.

•The guide ways guards shall be mounted; previously the supports of the travel measuring transducers must be mounted.

•The procedure will continue by mounting the other elements: the hydraulic installation, the electric equipment, and after filling the oil tanks, the adjustments and the tests of the machine- tool will be done.

### 7.3 Accurate Adjustment of the Machine Horizontality

1. The machine horizontality is adjusted by using levels, such as to keep the following tolerances:

•rectilinearity deviation of bed cross guide ways: 0,020/1000mm

•rectilinearity deviation of bed longitudinal guide ways: 0,020/1000 mm

•perpendicularity deviation of the column guide ways towards the bed guide ways, longitudinally = max 0,030/1000 mm (inside only)

•parallelism deviation of the boring spindle towards the longitudinal displacement of the table (measured both in horizontal and vertical planes) = 0,020/500 mm.

For adjusting the machine horizontality, the adjustment parts shall be used by making sure that all parts are equally under the load.

2. The protection parts shall be mounted onto the machine.

3. The oil tanks shall be filled.

### 7.4 Transportation

The machine shall be transported from manufacturer to the customer dismantled into subassemblies, being packed in accordance with the transport conditions and duration.

The manufacturer such as the machine to reach the customer in good conditions establishes the necessary packing for transportation.

After unpacking the subassemblies shall be transported by crane. The following rules shall be complied with:

- The cables shall be suitable to the load to be lifted, with no defects and long enough.

- The sensitive parts of the machine shall be protected with wood pieces and for avoiding paint scratching, rag shall be placed where necessary.

- The subassemblies shall hang perfect horizontally or vertically (i.e. the column) in order to avoid upsetting while starting or stopping the crane.

- Using two bars, which are passed through the bed holes specially provided, and two cables of equal length shall horizontally suspend the rotary table.

It is recommended the subassemblies to be lifted by crane as indicated in the pictures appended.

The transportation capacity of the crane shall be big enough for there subassemblies to be lifted.

For this reason the approximate weight of each main subassembly shall be indicated:

• <u>table</u>	- 3500 daN
• <u>saddle</u>	- 3000 daN
• <u>column</u>	- 8000 daN
• <u>headstock.</u>	- 3200 daN
• <u>table bed</u>	- 7000 daN
• <u>column saddle + column bed</u>	- 9000 daN
• <u>mechanical hand</u>	- 300 daN
• <u>tools magazine</u>	- 1800 daN
• <u>pallet</u>	- 3000 daN
• <u>table slide</u>	- 3000 daN

### 7.5 Unpacking

Assemblies featuring the component elements in state of functioning pack the machine tool. After the machine reception by the customer, the machine may be unpacked and checked unless damages occurred during the transportation.

If any damages occurred while transporting, both the transporting company and the manufacturer should be immediately advised.

It shall also be checked that the case contains all the accessories mentioned on the inventory list.

**ATTENTION : LIFTING HOLES TO BE USED ONLY FOR INDIVIDUAL HANDLING OF EACH PART.**