
RANDEK

1. Wall Line

Dimensions – External walls and partition walls

Maximum length:	7,000 mm (table length 7,200 mm)
Minimum length:	1,200 mm
Maximum height:	2,700 mm
Minimum height:	2,100 mm
Maximum thickness:	300 mm
Minimum thickness:	95 mm
Maximum weight:	800 kg
Station height:	700 mm

Position 1 – CNC-Controlled Framing Station

The FM3000 framing station is an advanced machine for the production of prefabricated timber framing. The machine is flexible and a range of optional features can be selected. It can be controlled using CAD/CAM.

Functional description

- Select the framing variant to be produced on the operator panel.
- Position bottom plates and top plates and fix them with cylinders after operator confirmation.
- Place a stud in the nailing position against the stud stop and confirm with a push-button, alternatively the stud can be fed automatically into the station (option FM3-SIF).
- Pneumatic vertical fixation of the stud.
- Fixation of the stud against the stud stop.
- Nailing of the stud, possible in up to eight different positions.
- Patented grippers advance the frame forward until the next nailing position.
- After a frame has been completed, it is possible to start the next without the station being empty. Completion may continue until the outfeed conveyor is full. When the conveyor is full, production is stopped automatically.
- Automatic drilling of holes in bottom and top plates for lifting slings or water/electrical services (FM3-DU).
- Insert sub-elements for windows/doors (existing system).
- The production process is repeated until the wall element is finished and automatically fed to the next station in the production line.

Technical description

- The station has one nail gun on each side, automatically movable in height with up to eight freely adjustable positions (nail tools not included). Nail tools are supplied to Randek and installed by us.
- Automatic grippers for advancing/positioning the framing.
- Roller trestles for infeed of bottom and top plates.
- Driven chain conveyors for outfeed of the framing.
- One side of the station is fixed and the other side is adjustable for different wall heights.
- Width adjustment is controlled from CAD files; the operator starts the cycle and holds the button until the cycle is complete.
- The station is supplied with a soft PLC and a control system.
- One industrial touchscreen, 19".
- The framing to be manufactured is presented on the screen and the material to be placed at each nailing position is highlighted with a specific colour. Data for constituent materials, such as dimensions and material type, are also displayed.
- Clear operator instructions are shown on the industrial touchscreen.

Dimensional limits

- Length: Max. 7,200 mm, Min. 1,200 mm
- Height: Max. 2,700 mm, Min. 2,100 mm
- Thickness: Max. 300 mm, Min. 95 mm

Safety

- In accordance with Directive 2006/42/EC
- CE-marked
- A safety mat is placed where the operator stands during placement of the studs.
- Protective mesh on the short and long sides after nailing. The mesh on the short sides has a slotted opening for the element.

Advantages

- Efficient production of timber-framed structures.
- Flexible with respect to the wall dimensions that can be handled.
- A number of options can be added.

- High level of safety.

Position 1.1 – Drilling Unit FM3-DU

Drilling unit for bottom plate and top plate, FM3-DU.
The FM3-DU is a drilling unit developed for the FM3000 framing station for drilling holes for lifting slings. CAD/CAM controlled.

Functional description

- Drilling is performed automatically according to the CAD/CAM data.

Technical description

- One drilling unit.
- CAD/CAM controlled.
- Drill dimension Ø 24 mm (max. 38 mm).
- Automatic adjustment for different wall thicknesses.

Safety

- In accordance with Directive 2006/42/EC
- CE-marked

Position 1.2 – Marking Pen

Marking pen, one for sole plate and one for top plate. Marking is applied at the upper edge of the bottom/top plate.

Functional description

- Marking is performed automatically according to the CAD/CAM data.

Technical description

- Two marking pens (bottom plate / top plate).
- CAD/CAM controlled.

Safety

- In accordance with Directive 2006/42/EC

- CE-marked

Position 2 – Sheathing Station with Alignment and Nailing, NT2000-084

Bench for wall elements with three driven chain conveyors for longitudinal transport and side retaining guides. One side is movable with motor and lateral alignment. Front stops for the element. A puller aligns the element against the stops. Maximum element length 7000 mm.

Note
At this station the element is clamped during work.

Position 3 – Manual Stapling Portal, NB1000F

The stapling portal NB1000F is a portal designed for efficient fastening of sheathing to timber framing. The portal is fitted with holders for stapling units.

Functional description

- The operator moves the portal over the station and controls where stapling and any other work carried out by the portal shall take place.
- Firing is controlled partly by the operator and partly with the aid of built-in automation for centre-to-centre spacing of fastening positions.

Technical description

- The nailing bridge runs on rails on the floor; working area max. 12 m longitudinally.
- The portal has two transverse carriages which can be equipped with various tools.
- Movement of the portal and tool carriages is manual via handwheels. Movements have pneumatic brakes for locking, e.g. when nailing studs.
- Laser light indicates the portal's position (longitudinal movement).
- Control system with different functions for easier operation of the portal.
- Two different preset centre-to-centre spacings for fastening positions are provided via knobs and the dimensions can be adjusted/changed via the control unit.
- The centre distances between nail/screw units on the transverse carriages are steplessly adjustable; the minimum distance depends on the chosen fastening units. Centre distances in the longitudinal direction are also adjustable.
- Pneumatic motor-driven transverse movement of the fastening carriages.
- Electric motor drive in the longitudinal direction by means of a joystick.

Position 4 – Workstation, Erector in Turning, NTU2000-084

Workbench and erecting unit with motorised alignment and width adjustment between 2,100–2,700 mm. Longitudinal transport on three flat chain conveyors. Max element length 7,200 mm.

Position 5 – Multifunction Portal – NB3000-072 (NC-controlled)

The portal is designed for automatic processing of elements above a station. The portal runs on rails on the floor.

The portal is manufactured from a robust steel construction and equipped with a portal beam on which it is possible to mount various processing units.

Standard equipment

- Portal beam, 1 pc.
- Four holders for screw driving units.
- One end mill (max. diameter 30 mm).

Technical data

- The portal is driven by servo motors and is fully NC-controlled for positioning in X, Y and Z axes.

Working area

- Max. working length: 7,200 mm + home position
- Max. element width: 2,700 mm
- Min. element width: 0 mm
- Max. element thickness: 400 mm
- Min. element thickness: 100 mm
- Station height: 700 mm

The portal is equipped with servo motors and all movements of the units run on linear guides.

Required machining is performed on-line from CAD.

Customer CAD data is transferred via an interface and can in principle be adapted to all CAD systems available on the market.

Operation of the portal is performed on an industrial PC with a 19″ colour touchscreen (Beckhoff) with graphical presentation.

The portal is equipped with an integrated safety system, laser scanners in both directions.

The portal is equipped with remote diagnostics via VPN.

Compressed air and power supply are provided from a cable ladder mounted on the wall.

Delivery includes cables/hoses from the connection point for a maximum travel of 8 m + home position.

Capacity information
For capacity specifications, see Appendix A.

The stated capacity data are theoretical but are also based on measurements and previous experience as well as information from ITW regarding the relevant unit. Capacity depends on several factors such as screw type, screw length and the type of material to be fastened. Accordingly, we cannot specify an exact capacity; the stated level should be regarded as indicative.

Position 6 – Workstation, Receiving and Turning Unit, TTR2000MS-072

The turning table TTR2000MS is an efficient and flexible machine for turning wall elements. Driven roller conveyors for efficient and gentle transport. Turning function for safe and precise turning. Laterally movable for good accessibility.

Functional description

- The receiving table moves laterally so that it meets the erecting table (Pos. 4) and the angle transfer unit (Pos. 7).
- The receiving table and erecting table are raised and the wall element is turned.
- The receiving table is lowered and moves laterally until the original position is reached.
- Manual work operations are carried out.
- The wall element is transported to the next station (Pos. 7).

Technical description

- The receiving table is adapted for handling elements in the following length: 7,200 mm (the following lengths are available: 4,800; 6,000; 7,200; 8,400; 9,600; 10,800 and 12,000 mm).
- Driven roller conveyors.
- Frequency-controlled roller conveyor for a smooth and gentle start.
- Laterally movable and equipped with necessary stops.

Safety

- In accordance with Directive 2006/42/EC
- CE-marked

Dimensional limits

- Length: Max. 7,200 mm, Min. 1,200 mm
- Height: Max. 3,300 mm, Min. 2,100 mm

Advantages

- Safe and efficient turning of wall elements.

Position 7 – Workstation with Angle Transfer, WT-VT2000-072

Randek worktable WT-VT2000 is a workstation with angle transfer. The station provides good accessibility for different element widths. Two height-adjustable chain conveyors for longitudinal transport and driven roller conveyors in the transverse direction. (Alternatively, the rollers are height-adjustable.)

Functional description

- The element is transported onto the roller conveyors and out onto the chain conveyors.
- Perform nailing or other work, manually or with a portal.
- After the work on the element is completed, it is transported to the next station; via roller conveyor to Pos. 8 or via chain conveyor to Pos. 9.

Technical description

- For element length 7,200 mm (available for the following element lengths: 6,000; 7,200; 8,400; 9,600; 10,800 and 12,000 mm).
- Two pneumatically height-adjustable chain conveyors for longitudinal transport of the element.
- Driven roller conveyors for transverse transport.
- Working height is 700 mm.

Advantages

- Good accessibility when working on the element.

Position 8 – Workstation with Erecting Function, TTR2000MS-FS-072

The turning table TTR2000MS is an efficient and flexible machine for erecting wall elements. Roller conveyor for efficient and gentle transport. Laterally movable for good accessibility.

Functional description

- The table moves laterally for staging to the outfeed track.
- The table is lowered and moves laterally until the original position is reached.
- Manual work operations are performed.

Technical description

- The receiving table is adapted for handling elements in the following length: 7,200 mm (the following lengths are available: 4,800; 6,000; 7,200; 8,400; 9,600; 10,800 and 12,000 mm).
- Frequency-controlled roller conveyors for a smooth and gentle start.
- Laterally movable.
- Pneumatically foldable stops for staging and outfeed to track.

Safety

- In accordance with Directive 2006/42/EC
- CE-marked

Dimensional limits

- Length: Max. 7,200 mm, Min. 1,200 mm
- Height: Max. 2,700 mm, Min. 2,100 mm

Advantages

- Safe and efficient erecting of wall elements.

Position 9 – Workstation with Angle Transfer, WT-VT2000-072

Same as Position 7 but with a station height of approximately 600 mm.

Position 10 – Workstation with Erecting Function, TTR2000MS-FS-072

Same as Position 8 but equipped with stops and alignment for elements and panel cassette. Station height approx. 600 mm. The panel overhang at the lower edge of the wall is always the same dimension (265 mm).

Equipment list (summary)

Position	Product name	Product code	Quantity
1	Framing station	FM3000-084	1
1.1	Drilling unit	FM3-DU	2
1.2	Marking pens	—	2
2	Sheathing station, alignment	NT2000-084	1
3	Manual stapling portal	NB1000F-072	1
3.1	Pneumatic motor	NB1-AM	1
3.2	Electric drive (Pos. 3)	NB1-XD	1
4	Workstation, erecting unit	NTU2000-072	1
5	Multifunction portal (NC-controlled)	NB3000-072	1
5.1	End mill	NB3-ROI	1
6	Workstation, receiving	TTR2000-072	1
7	Workstation, angle transfer	WT-VT2000-072	1
8	Workstation, erecting	TTR2000MS-FS	1
9	Workstation, angle transfer	WT-VT2000-072	1
10	Workstation, erecting	TTR2000MS-FS	1