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BUTTERFLY TABLE BS20



RANDEK™

BUILDING THE FUTURE

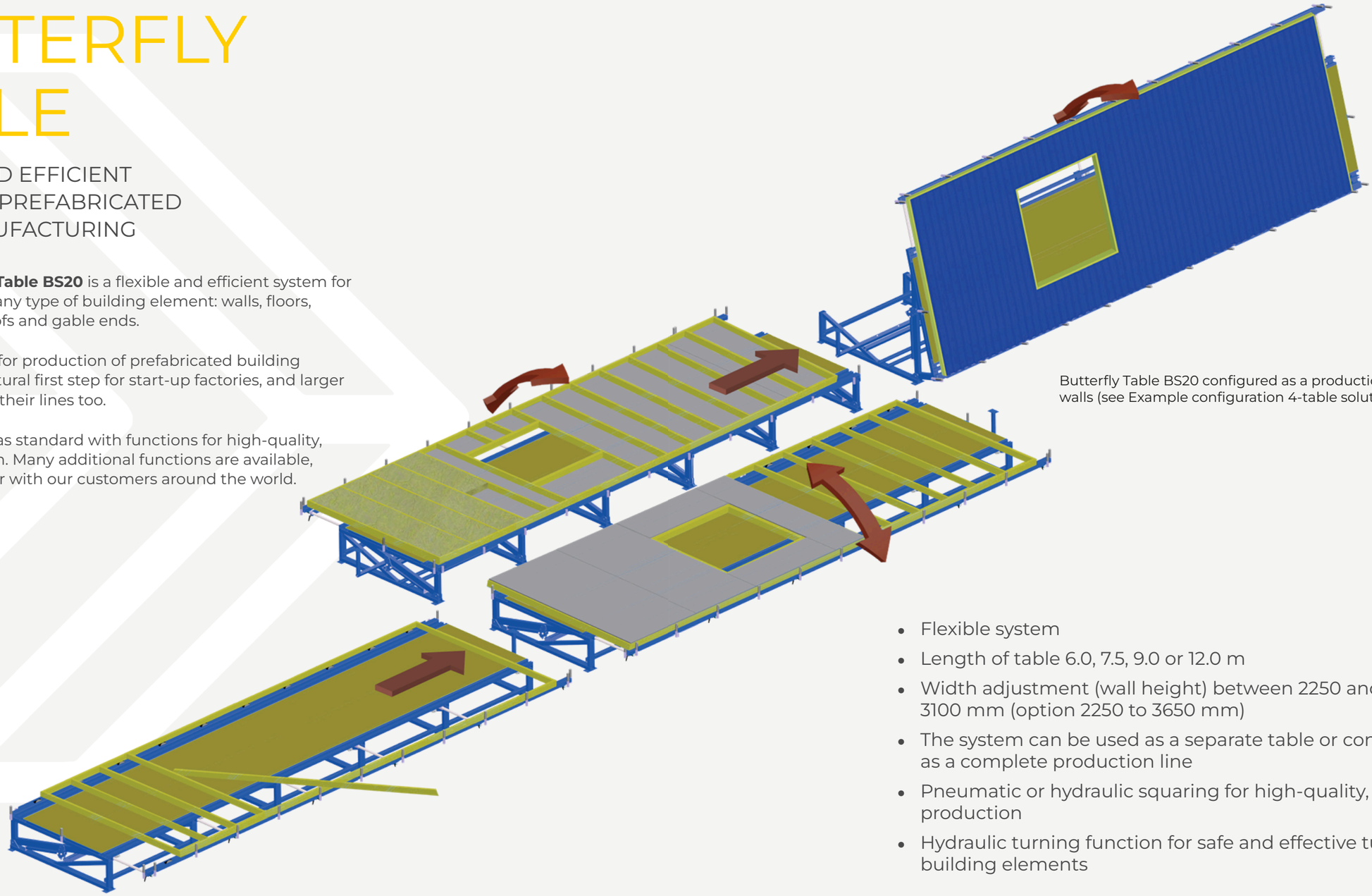
BS20
BUTTERFLY TABLE

FLEXIBLE AND EFFICIENT SYSTEM FOR PREFABRICATED HOUSE MANUFACTURING

Randek Butterfly Table BS20 is a flexible and efficient system for producing almost any type of building element: walls, floors, inner and outer roofs and gable ends.

BS20 is developed for production of prefabricated building elements. It is a natural first step for start-up factories, and larger producers use it in their lines too.

BS20 tables come as standard with functions for high-quality, efficient production. Many additional functions are available, developed together with our customers around the world.

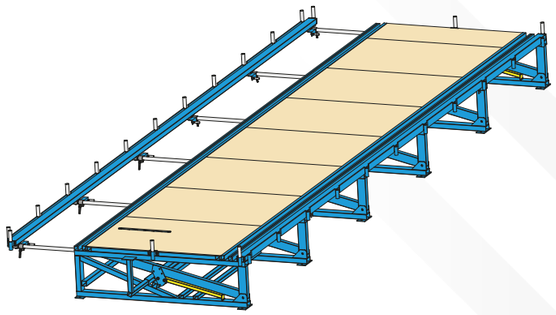


Butterfly Table BS20 configured as a production line for walls (see Example configuration 4-table solution, page 8)

- Flexible system
- Length of table 6.0, 7.5, 9.0 or 12.0 m
- Width adjustment (wall height) between 2250 and 3100 mm (option 2250 to 3650 mm)
- The system can be used as a separate table or configured as a complete production line
- Pneumatic or hydraulic squaring for high-quality, efficient production
- Hydraulic turning function for safe and effective turning of building elements

UPRAISE TABLE

The Upraise Table is the starting point for most BS20 systems. It is equipped with pneumatic squaring and width adjustment. The table is covered with plywood, and removable support pins for squaring the building elements are placed on both sides of the table.



Included Option

Basic design		
Function		
Hydraulic Turning - 90 degrees	One choice	✓
Hydraulic Turning - 80 degrees		↗
No Turning		↗
Fixed rollers, 2 rows	One choice	↗
Fixed rollers, 3 rows		↗
Upraisable Rollers, 2 rows		↗
Upraisable Rollers, 3 rows		↗
Manual Width Adjustment - No squaring	One choice	↗
Manual Width Adjustment - Pneumatic squaring		✓
Extended Manual Width Adjustment - Pneumatic squaring		↗
Hydraulic Width Adjustment - Hydraulic squaring		↗
Extended Hydraulic Width Adjustment - Hydraulic squaring		↗
C-Bars, Across		↗
Hole Beams, Across		↗
Hole Beams, Short side (2 pc)		↗
Vertical Outfeed of Wall Element		↗
Air Supply for Pneumatic Tools		↗
Plywood		✓
C-bars, Lengthwise		✓
Removable support pins (fixed side)		✓
Removable support pins (movable side)		✓
Removable support pins (short side)		✓

FUNCTION DESCRIPTION

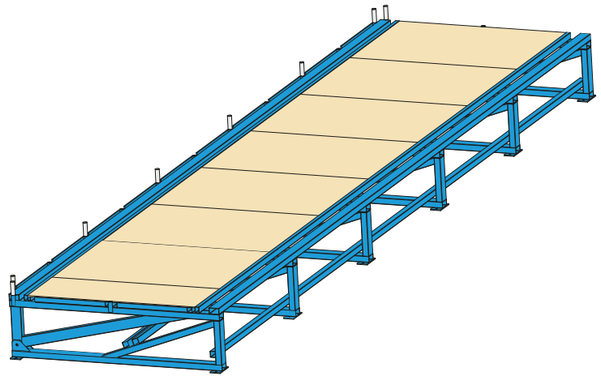
- Adjust the width of the table
- Build the framework directly on the table: top/bottom plates and studs
- Square the building element to an accurate 90 degrees
- Nail the framework from both sides
- Perform manual operations such as installation, insulation and board nailing
- Start the turning process: the receiver and upraise tables are raised and the element is turned

Technical description	BS10U-060	BS10U-075	BS10U-090	BS10U-120
Element length	6000 mm	7500 mm	9000 mm	12000 mm
Max lift capacity (element height = 2.5 m)*	1000 kg	790 kg	1450 kg	2000 kg
Working height	620 mm			
Element thickness	63–300 mm (limited by element weight)			
Element height	2250–3100 mm (option 2250–3650 mm)			
Safety	The machine is equipped with emergency stop			
Electricity	Configured to the destination market. Contact Randek.			
Air	7 bar			

* Increased max lift capacity upon request

RECEIVER TABLE

The Receiver Table is normally the second table, which receives the building element after turning. The table is covered with plywood. Removable support pins for turning the element are placed on one side of the table.



Included Option

Basic design		
Function		
Hydraulic Turning - 90 degrees	One choice	✓
Hydraulic Turning - 80 degrees		↗
No Turning		↗
Fixed rollers, 2 rows	One choice	↗
Fixed rollers, 3 rows		↗
Upraisable Rollers, 2 rows		↗
Upraisable Rollers, 3 rows		↗
Manual Width Adjustment - No squaring	One choice	↗
Manual Width Adjustment - Pneumatic squaring		↗
Extended Manual Width Adjustment - Pneumatic squaring		↗
Hydraulic Width Adjustment - Hydraulic squaring		↗
Extended Hydraulic Width Adjustment - Hydraulic squaring		↗
C-Bars, Across		↗
Hole Beams, Across		↗
Hole Beams, Short side (2 pc)		↗
Vertical Outfeed of Wall Element		↗
Air Supply for Pneumatic Tools		↗
Plywood		✓
C-bars, Lengthwise		✓
Removable support pins (fixed side)		✓
Removable support pins (movable side)		↗
Removable support pins (short side)		✓

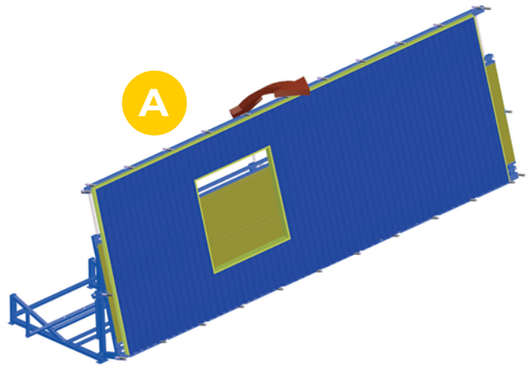
FUNCTION DESCRIPTION

- Continue the turning process and lower the wall. Both upraise and receiver tables are lowered and the building element is turned over.
- Perform manual operations such as installation, insulation and board nailing
- Fasten the lifting straps to a conveyor system or other lifting equipment. Raise the table and pull the building element with the conveyor system at the same time. At 90 degrees the building element is removed from the working station.

Technical description	BS10R-060	BS10R-075	BS10R-090	BS10R-120
Element length	6000 mm	7500 mm	9000 mm	12000 mm
Max lift capacity (element height = 2.5 m)*	1000 kg	790 kg	1450 kg	2000 kg
Working height	620 mm			
Element thickness	63–300 mm (limited by element weight)			
Element height	2250–3100 mm (option 2250–3650 mm)			
Safety	The machine is equipped with emergency stop			
Air	Supplied from the upraise table			

* Increased max lift capacity upon request

EXAMPLE CONFIGURATION
1-TABLE SOLUTION



SEPARATE UPRAISER BS10U

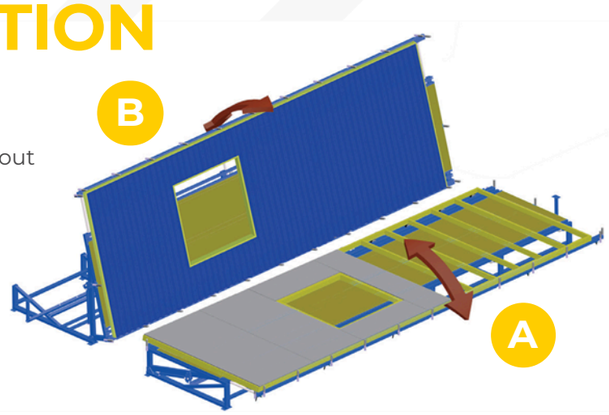
BS20 1-table solution is used when producing open panels, curtain walls or other open components (floors, roofs).

POSITION A (OPERATIONS: BUILD FRAMEWORK, BOARD NAILING)

Hole Beams BS2-HBL as an option add flexibility for building elements less than 2250 mm in height or angled walls. Alignment function: Hydraulic Squaring or Pneumatic Squaring.

Extended Width Adjustment for elements higher than 3100 mm (up to 3650 mm). The Vertical Outfeed of Wall Element BS2-RVP is used when the walls are fed from the machine in vertical position.

EXAMPLE CONFIGURATION
2-TABLE SOLUTION



STANDARD BS20 SYSTEM

The BS20 2-table solution is the standard layout used by producers worldwide. It produces insulated walls, floors and roofs.

POSITION A (OPERATIONS: BUILD FRAMEWORK, BOARD NAILING)

Hole Beams as an option add flexibility for building elements less than 2250 mm in height or angled walls. Clamping: Hydraulic or Pneumatic Squaring. Extended Width Adjustment for elements higher than 3100 mm (up to 3650 mm).

POSITION B (OPERATIONS: INSULATION, BOARD/CLADDING NAILING)

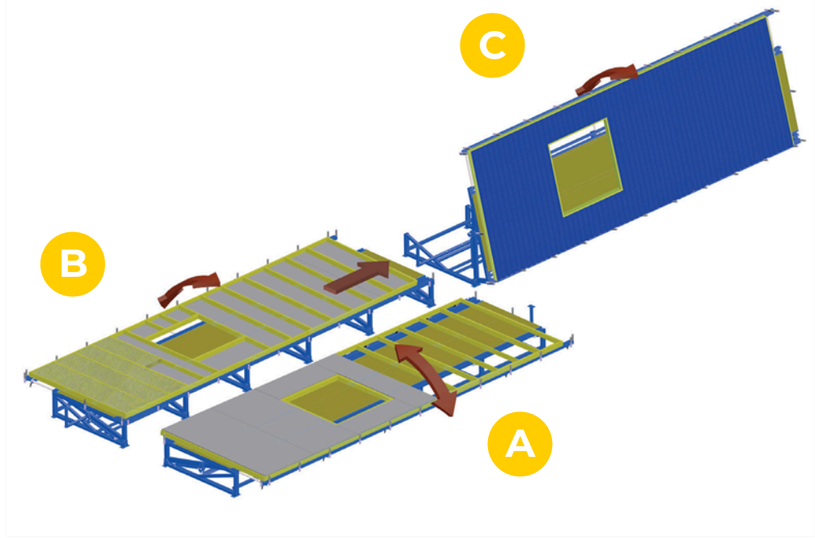
The Vertical Outfeed of Wall Element is used when the walls are fed from the machine in vertical position.

EXAMPLE CONFIGURATION
3-TABLE SOLUTION

BS20 WITH EXTRA STATION

In this 3-table solution the work after turning, which generally takes longer than the work before turning, is split across 2 stations to increase capacity. This line produces insulated walls, floors and roofs.

The system can be configured with Upraisable Rollers or Fixed Rollers for transport. Rollers (page 11) must be used in the first station, where the framework is built. Clamping: Hydraulic or Pneumatic Squaring. Extended Width Adjustment for elements higher than 3100 mm (up to 3650 mm).



POSITION A (OPERATIONS: BUILD FRAMEWORK, BOARD NAILING)

Hole Beams as an option add flexibility for building elements less than 2250 mm in height or angled walls. To transport elements less than 2250 mm in height after turning, the stations need a “third” roller conveyor.

POSITION B (OPERATIONS: INSULATION, BOARD NAILING)

Upraisable Rollers (3 rows) or Fixed Rollers (3 rows) to transport elements less than 2250 mm in height.

POSITION C (OPERATIONS: NAILING OF CLADDING ETC.)

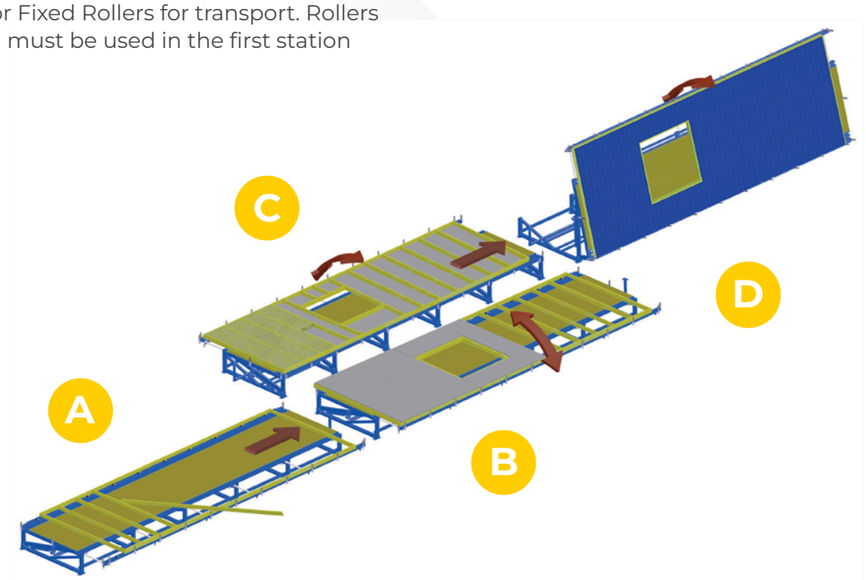
The Vertical Outfeed of Wall Element is used when the walls are fed from the machine in vertical position.

EXAMPLE CONFIGURATION
4-TABLE SOLUTION

BS20 WITH FRAMING STATION AND EXTRA STATION

Here 4 tables form a production line, splitting the work into four positions to get the most out of line production. This line produces insulated walls, floors and roofs.

The system can be configured with Upraisable Rollers or Fixed Rollers for transport. Rollers (page 11) must be used in the first station where the framework is built. Clamping: Hydraulic or Pneumatic Squaring. Extended Width Adjustment for elements higher than 3100 mm (up to 3650 mm).



POSITION A
(OPERATIONS: BUILD FRAMEWORK)

Hole Beams BS2-HBL as an option add flexibility, e.g. for angled walls.

POSITION B
(OPERATIONS: BOARD NAILING)

Hole Beams are an option in this station too, for building elements less than 2250 mm in height. When producing these small elements this station (B) acts as the first station. To transport the element after turning, the stations need a “third” roller conveyor.

POSITION C
(OPERATIONS: INSULATION, BOARD NAILING)

Upraisable Rollers (3 rows) BS2-RL3 or Fixed Rollers (3 rows) BS2-FR3 to transport elements less than 2250 mm in height.

POSITION D
(OPERATIONS: NAILING OF CLADDING ETC.)

The Vertical Outfeed of Wall Element BS2-RVP is used when the elements are fed from the machine in vertical position.

EQUIPMENT AND FUNCTIONS
IN THE EXAMPLE CONFIGURATIONS

Below are the functions for the example configurations. BS20 is a flexible modular system: options are added to fit the production of each customer.

Option	Model	Page		1-table solution: A	2-table solution: B A	2-table solution: C B A	3-table solution: D C B A	4-table solution: D C B A
Hydraulic Turning - 90 degrees	BS2-T9	12	One choice	⛔	✅ ✅	⛔ ✅ ✅	⛔ ✅ ✅ ⛔	
Hydraulic Turning - 80 degrees	BS2-T8	12		✅	⛔ ⛔	✅ ⛔ ⛔	✅ ⛔ ⛔ ⛔	
Fixed Rollers (2 rows)	BS2-FR2	11	One choice			↗ ↗ ↗	↗ ↗ ↗ ↗	
Fixed Rollers (3 rows)	BS2-FR3	11				↗ ↗	↗ ↗	
Upraisable Rollers (2 rows)	BS2-RL2	11				✅ ✅	✅ ✅ ✅ ✅	
Upraisable Rollers (3 rows)	BS2-RL3	11				↗ ↗	↗ ↗	
Manual Width Adjustment (no squaring)	BS2-MW3100	14	One choice			↗ ↗	↗ ↗	
Manual Width Adjustment Pneumatic Squaring	BS2-MW3100P	14		✅	✅	✅ ✅ ✅	✅ ✅ ✅ ✅	
Extended Manual Width Adjustment Pneumatic Squaring	BS2-MW3650PS	14		↗	↗	↗ ↗ ↗	↗ ↗ ↗ ↗	
Hydraulic Width Adjustment and Squaring	BS2-HW3100HS	14		↗	↗	↗ ↗ ↗	↗ ↗ ↗ ↗	
Extended Hydraulic Width Adjustment and Squaring	BS2-HW3650HS	14		↗	↗	↗ ↗ ↗	↗ ↗ ↗ ↗	
C-bars, Across	BS2-C	13						
Hole Beams, Across	BS2-HBL	13		↗	↗	↗	↗ ↗	
Hole Beams, Short side	BS2-HBC	13						
Vertical Outfeed of Wall Element	BS2-RVP	16		↗	↗	↗	↗	
Air Supply for Pneumatic Tools	BS2-XA	17						

✅	Chosen option
↗	Other recommended options
	Possible options
⛔	Options not allowed in this configuration

CONFIGURE YOUR **BUTTERFLY TABLE**

Each function is described in detail on the following pages. Read the descriptions and choose the functions that fit your production. Your Randek contact is happy to help.

The base of the BS20 system is a standard machine that can be equipped with many options and add-ons. The standard machine is built as an upraiser, a receiver or a working table (without hydraulic turning), in lengths of 6.0, 7.5, 9.0 and 12.0 m. All options can be added to the standard machines and are available in the same length steps.

Basic machine	Model	Station length
Upraiser Table	BS10U-060	6000 mm
Upraiser Table	BS10U-075	7500 mm
Upraiser Table	BS10U-090	9000 mm
Upraiser Table	BS10U-120	12000 mm
Receiver Table	BS10R-060	6000 mm
Receiver Table	BS10R-075	7500 mm
Receiver Table	BS10R-090	9000 mm
Receiver Table	BS10R-120	12000 mm
Working Table	BS05-060	6000 mm
Working Table	BS05-075	7500 mm
Working Table	BS05-090	9000 mm
Working Table	BS05-120	12000 mm

To configure a receiver or upraiser, choose hydraulic turning (page 12) and horizontal transport (page 11) in addition to the basic machine.
For the Working Table, choose the horizontal transport option (page 11).

HORIZONTAL TRANSPORT OF ELEMENT

ROLLERS FOR TRANSPORT OF ELEMENTS IN HORIZONTAL POSITION ENABLE PRODUCTION LINES WITH BS20.

All tables can be equipped with rollers for transport of elements in horizontal position. The rollers can be fixed or upraisable. The rollers are placed under the top and bottom plates of the element so that the element is not damaged. The roller system consists of two rollers, one of which is placed on the width adjustment so that it can be positioned under the top plate for all element widths.

The building element is easily moved by pushing it forward by hand. An extra roller can also be placed in the middle of the table, to transport building elements narrower than 2250 mm after turning; these elements need to be sheathed (see the 3- and 4-table solutions in the example layouts).

- Rollers for effective transport of building elements in horizontal position
- Fixed or upraisable rollers
- Gain efficiency by producing in a BS20 line



FUNCTION DESCRIPTION UPRAISABLE ROLLERS

- Build the framework accurately and efficiently using the squaring function.
- Raise the rollers and push the element forward to the next station
- Lower the rollers

HYDRAULIC TURNING

SAFE AND EFFECTIVE TURNING OF BUILDING ELEMENTS WITH THE HYDRAULIC TURNING FUNCTION.



BS10/20 tables are equipped with the hydraulic turning function. The table rises to 90 degrees for turning and to 80 degrees for upraising.

Turning and upraising are performed by the operator using a control unit placed separately from the tables. Turning is performed by hydraulic cylinders fed from a hydraulic unit.

- Safe, effective and non-damaging turning of walls and building elements
- Upraise or turning function

FUNCTION DESCRIPTION TURNING FUNCTION

- The receiver table is raised to 90 degrees and then the upraise table is raised
- The receiver table is lowered and the building element is turned: safe, effective and non-damaging. The upraise table is lowered.
- The building element is finalized
- The receiver table is raised and the wall element is transported using a conveyor system or the Vertical Outfeed of Wall Element.

FLEXIBLE SUPPORT

FLEXIBLE SUPPORT FOR BUILDING ELEMENTS USING C-BARS AND HOLE BEAMS.

To produce building elements of almost any type and shape, the BS20 system can be expanded with extra support features: C-bars and hole beams.

C-BARS

C-bars make it possible to place support devices that run in the C-bars. The standard configuration of the BS20 system has 2 C-bars running along the table on each side. They are used to mark where to place studs etc. As an option, C-bars can be placed across the table.

HOLE BEAMS

Hole beams enable flexible support and clamping. The same support pins that are placed along the table can be placed in the hole beams, which makes it possible to produce building elements less than 2250 mm in width. Movable clamping cylinders can also be placed for extra clamping, e.g. for angled building elements or when clamping is needed from inside the element towards the support pins. The hole beams are placed across the table or on the short side of the table, for clamping towards the short side of the building element.



- Flexible clamping and support with C-bars and hole beams
- Enables production of short and angled building elements
- Extra pneumatic clamping from several directions





WIDTH ADJUSTMENT AND SQUARING

EFFECTIVE PRODUCTION OF BUILDING ELEMENTS WITH THE SQUARING AND WIDTH ADJUSTMENT FUNCTION.

The squaring function clamps and straightens the framework, pneumatically or hydraulically, to 90 degrees and eliminates bowed timber. The width adjustment function enables flexible production, where building elements with different widths can be produced efficiently.

SQUARING FUNCTION

The working table has 160 mm high support pins on all sides. One long side is adjustable in width and can be equipped with pneumatic or hydraulic squaring. The support pins are pushed against the framework, squaring it to 90 degrees and eliminating bowed timber. Both short sides of the table are also equipped with support pins.

WIDTH ADJUSTMENT FUNCTION

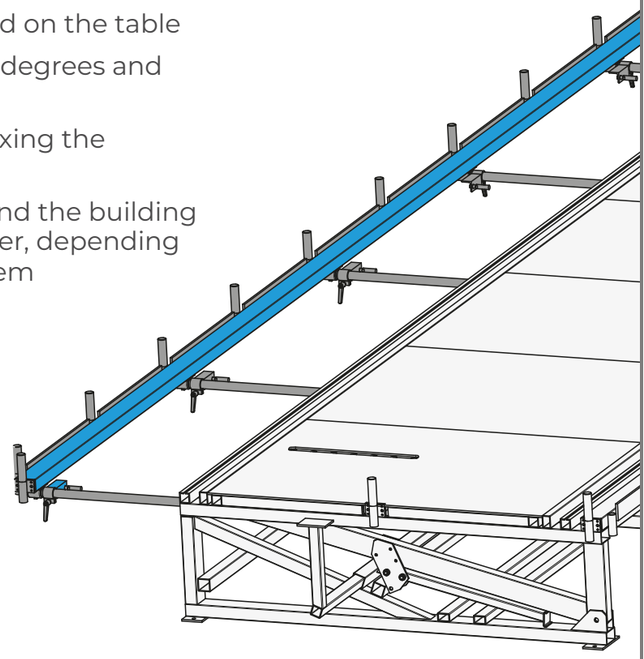
Flexibility comes from the width adjustment function. The width of the building element (wall height) is set between 2250 and 3100 mm, or 2250 to 3650 mm as an option. Extended Width Adjustment extends the width adjustment to 3650 mm, and Hole Beams make it possible to lower the minimum width from the standard 2250 mm to the desired width (wall height). On the pneumatic system the width is adjusted by releasing the width adjustment side and pulling it outwards by hand. On the hydraulic system the operator adjusts the width hydraulically, using the same system as the squaring.



View showing hydraulic width and squaring function

FUNCTION DESCRIPTION

- The width (wall height) is set with the width adjustment: manually on the pneumatic system, hydraulically on the hydraulic system.
- Studs and top/bottom plates are placed on the table
- The building element is squared to 90 degrees and bowed timber is eliminated
- The framework with boards is nailed, fixing the squared element
- The squaring function is deactivated and the building element is turned or transported further, depending on the configuration of the whole system



3D view of the manual width adjustment with pneumatic squaring

OUTFEED
OF WALL ELEMENT

OUTFEED OF WALL ELEMENT IN UPRAISED POSITION FOR EFFECTIVE PRODUCTION, HANDLING AND STORAGE.

The upraise table has support pins with rollers for outfeed of the wall element in upraised position. The wall element is fed from the upraise table onto wall wagons on a rail or onto an outfeed track with rollers, then on to a working station (or directly to a stock system), where manual processes such as window mounting and stucco can be performed. These jobs are easier with the wall standing, which raises productivity in the factory.



- Outfeed of wall element in upraised position.
- Less need for a conveyor
- In the storage or working area, working processes can be performed.

FUNCTION DESCRIPTION

- The wall is raised to vertical position with an upraise table
- The wall is fed out in vertical position on support pins with rollers, to adjacent wall wagons on a rail or to an outfeed track with rollers
- The wall element is placed in a vertical storage system. Manual processes such as window mounting, electrical installations, stucco and painting can be performed.

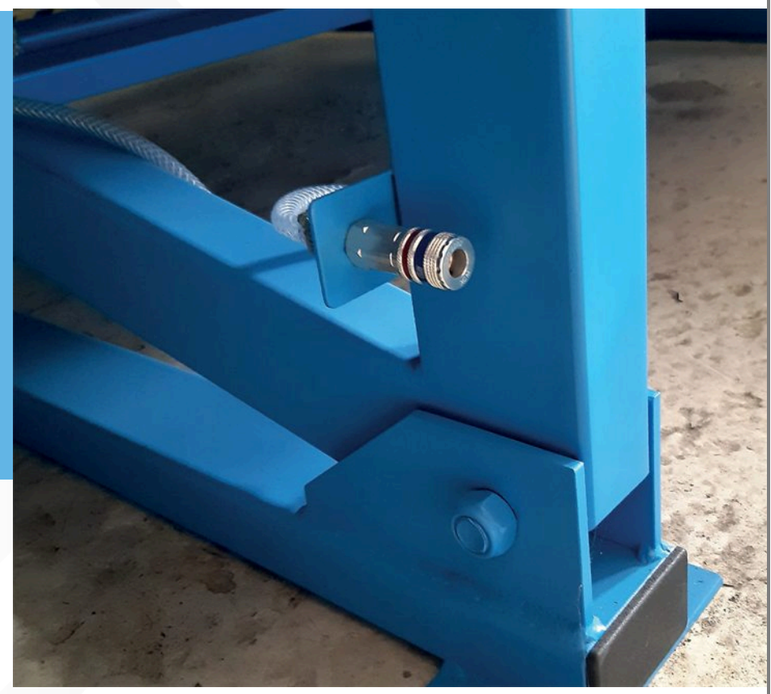
				Option	Model
6 m	**7.5 m**	**9 m**	**12 m**		
118969AA	118969AB	118969AC	118969AD	Vertical Outfeed of Wall Element	BS2-RVP
WAR1-D80-060	WAR1-D80-075	WAR1-D80-090	WAR1-D80-120	Working/storage area 80°	WAR1

AIR SUPPLY
FOR PNEUMATIC TOOLS

CONNECT PNEUMATIC TOOLS DIRECTLY ON THE WORKING TABLE FOR EFFECTIVE PRODUCTION.

2 air supply points are placed at the centre of the long sides of the working tables. Pneumatic tools can be connected directly to the table, which minimizes loose air hoses on the production floor and the time for connecting tools.

- Connect pneumatic tools directly to the working tables
- Minimize air hoses on the production floor
- Effective production

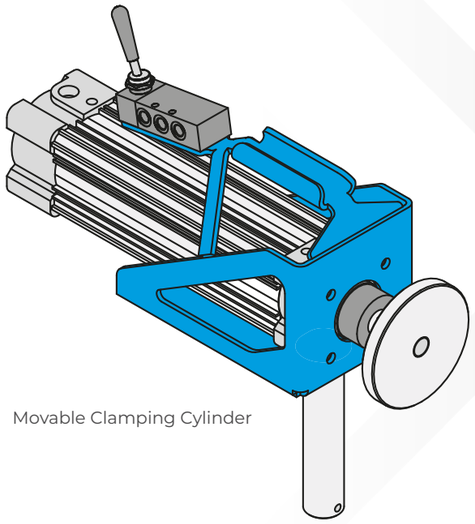


				Option	Model
6 m	**7.5 m**	**9 m**	**12 m**		
118970AA	118970AB	118970AC	118970AD	Air Supply for Pneumatic Tools	BS2-XA

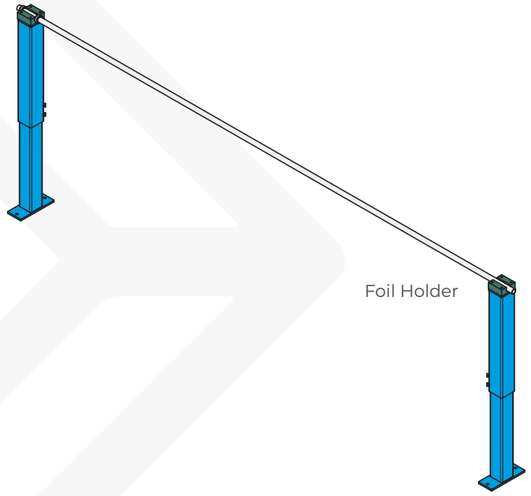
ACCESSORIES

RANDEK BS20 SYSTEMS CAN BE COMPLEMENTED WITH ACCESSORIES AND EQUIPMENT THAT ARE INTEGRATED INTO THE TABLES AND PRODUCTION LINES.

Name	Model	Description
Movable Clamping Cylinder	BS3-CC	Placement in hole beam, press force 1870 N at 6 bar
Round Support	BS2-S	Support for C-bars
Foil Holder	HFM002-High	Length: 3700 mm, Height: 850–1350 mm
Foil Holder	HFM002-Low	Length: 3700 mm, Height: 450–600 mm
Material Table	MHT001	Table for handling of building material
Material Element Trolley	LMW001	Trolley for smaller components



Movable Clamping Cylinder



Foil Holder



Material Table



Material Element Trolley



SWEDISH QUALITY LASTS

Randek has developed automation for the prefabricated house manufacturing industry since 1943. Today Randek supplies high-performance machines, robotic solutions and complete production lines to house manufacturers in 40 countries on four continents.

PRODUCTS/SYSTEM



SP720 SERIES CUT SAWS

Sturdy, reliable cut saws for house and roof truss manufacturers, with computer-controlled length stops.



WALL, FLOOR AND ROOF LINES

Tailor-made systems for prefabricated walls, floors and roofs. From manual to fully automated.



ROBOTIC SYSTEMS

Randek Robotics develops the ZeroLabor Robotic System: robot cells for sheathing, sub-assembly and insulation.



ROOF TRUSS SYSTEMS

Randek Truss System NT for traditional truss production and the AutoEye System for automated pressing.



BUTTERFLY TABLES

Wall-turning tables, a Randek invention from 1963. From a single manual table to a full line.

RANDEK SERVICES



RANDEK PRE-STUDY



MAINTENANCE



GLOBAL SUPPORT



MYRANDEK

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