

CNC Cross-Cut Systems

Series 18/24



MODEL OVERVIEW



Fig. 1 Large cross sections of waney and square-edged solid wood

The PAUL series 18 and 24 heavy-duty cross-cut systems have been developed for the CNC-controlled cutting of large cross sections of waney or square-edged solid wood or glue-laminated sections.

Thanks to their sharp acceleration characteristic and high sawing capacity these cross-cut systems count among the most efficient in their class. The basic models can be equipped with a wide range of accessories and various CNC controls and so be highly automated.

The integrated sawdust guiding system ensures a smooth dust extraction through a single dust outlet, assisted by the complete enclosure of the cross-cut saw.



Fig. 2 CNC cross-cut system, model 18E



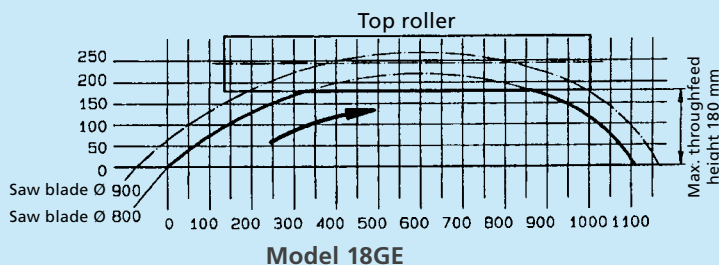
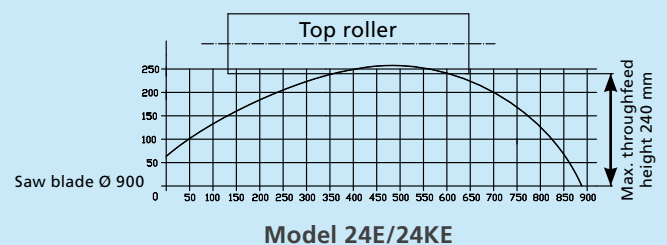
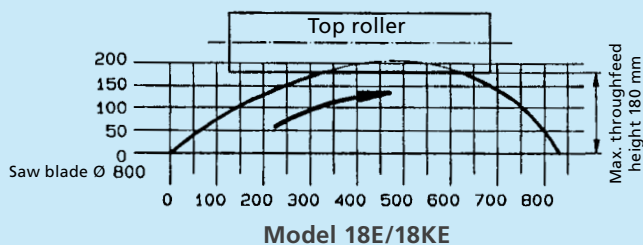
LARGE CUTTING RANGE

Model 18 and 24 cross-cut systems are mostly used for cut-first applications, i.e. for the pre-cross-cutting of large cross sections before ripping them into strips or squared beams. However, they are also suitable for the efficient length cutting of construction timber and trusses.

Model 24 with its extra large cutting range and model 18GE with its extra large cutting width are particularly suited to this kind of application.

Processing heavy timber requires a heavy-built, distortion-free machine frame to permanently withstand the

severe stresses imposed. Just the weight of the cross-cut saw of more than two tons provides the necessary stability to cope with maximum feed and cutting requirements.



MODEL VARIETY

	18E / 24E	18KE / 24KE	18GE	18KGE
Partial optimization	•	•	•	•
Defect cutting with luminescent scanner		•		•
Full optimization	•		•	
Quality optimization	•		•	
High-speed servo cutting stroke			•	•
Large cutting width			•	•

DETAILS

▶ SEGMENTED TOP ROLLERS

Segmented top and continuous bottom feed rollers of a large diameter ensure precise guidance of even difficult timber – a prerequisite to the millimeter-accurate timber positioning and the resulting high cut-to-length accuracy.

As soon as a workpiece has been cut, the independent pressure loaded top rollers lift up automatically and come down onto the next workpiece.

This allows to process boards and planks of constantly changing thickness without the need for extra adjustment of the top roller height.



Fig. 3 Inside view of a model 18GE: Segmented top rollers, tilting sweeper

Any remaining pieces staying in the machine (e.g. in the case of a short end trim cut) can be simply pushed

out by a tilting sweeper (option) with the top rollers lifted up.

▶ MODEL 18/24 IN EVERYDAY USE



Fig. 4 Automatic destacking, stick removal and turn-over device

On the model 18/24 machines large cross sections – waney or square-edged – can be processed largely automatically. An extensive range of accessory equipment make work easier and increase productivity.

The timber to be cut can be automatically destacked and fed to the cross-cut system. If required, a turn-

over device will turn the boards or planks to the required side.

Defects in the timber, such as knots and cracks are marked without touching the timber. The easy-moving measuring carriage is equipped with few function keys and a laser indicating its current position. The operator moves the laser to the defects to be



Fig. 5 Automatic turn-over device

cut out and presses a key to transmit their locations to the optimizing computer.

The clear pieces between the defects are optimized based on the lengths programmed in the cutting lists. Depending on the type of optimization chosen the computer selects a combination of several lengths giving minimum waste.

During grading the board is placed on a support along the infeed roller conveyor. Whilst one board is being cut, the next one can already be measured and graded – without interrupting the production flow.

Fig. 6 Movable measuring carriage for the non-contact cutting point and defect marking



Fig. 7 Modern CNC control with touch screen



Fig. 8 Non-contact grading by means of a laser and function keys

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THE MEASURING CARRIAGE



Fig. 9 Measuring carriage with robust function keys and illuminated display

In everyday use the complete cross-cut system is almost exclusively operated from the robust keypad on the measuring carriage. The laser and red LED readout show the operator the current position of the measuring carriage. The display that is clearly readable even in sunlight shows either the total length covered by the carriage from the first cut or only the length since the last cut.

Depending on the user's requirements the cutting points or defects,

such as knots or stains are "marked" by pressing a key.

Quality marking

On models 18KE/24KE and 18KGE the operator marks the defects in the wood with special crayon lines which are recognized by a luminescent scanner within the cross-cut saw.



WASTE DISPOSAL & SORTING UNIT

Trim cuts, knots and other waste pieces fall through a gap between the outfeed belt conveyor and the following sorting conveyor, e.g. onto a waste belt conveyor. If required, long waste pieces are cut into firewood lengths.

The cut finished lengths can be ejected at preset sorting stations: Either only a specific length at each station or several different lengths at a common station.

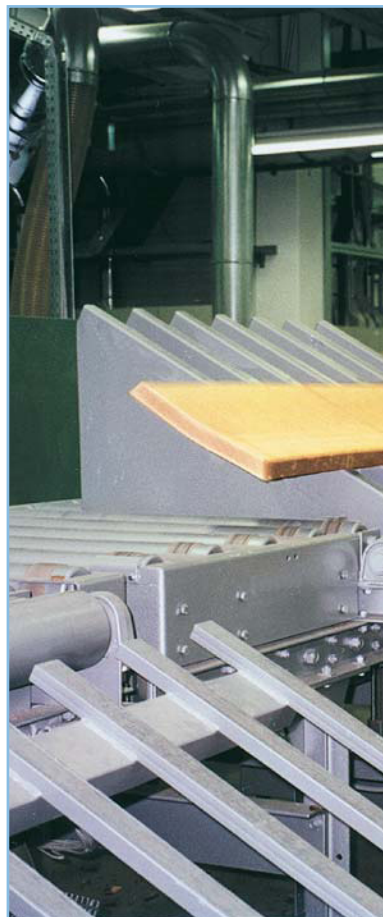


Fig. 11 Automatic ejection of fixed lengths at the requested sorting station

Fig. 10 Outfeed of cut pieces and length sorting unit

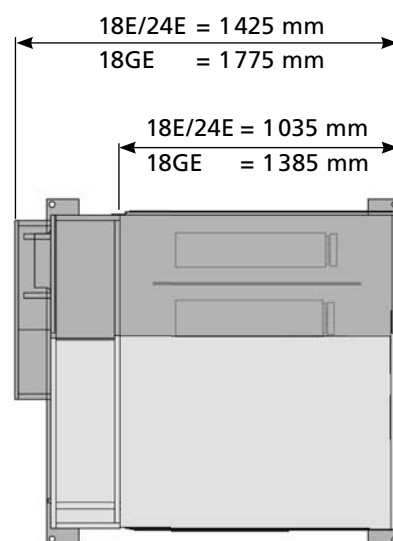
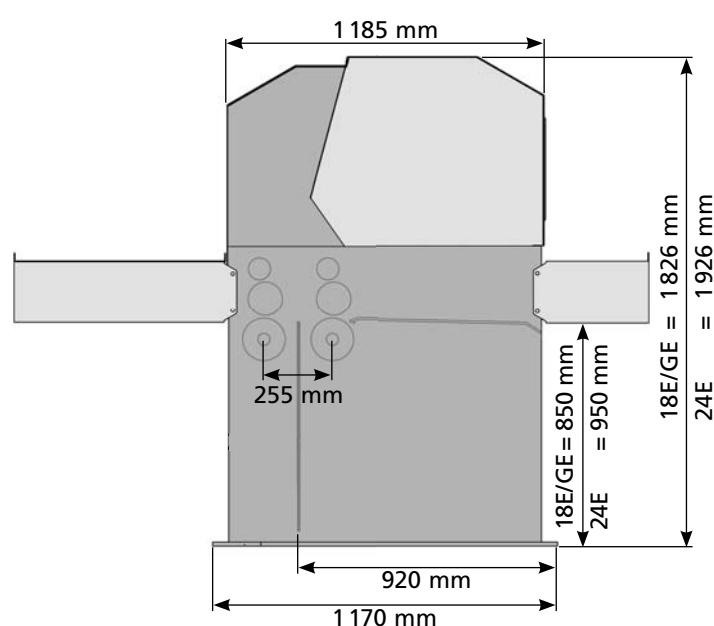


TECHNICAL DATA

	18E / 18KE	18GE / 18KGE	24E / 24KE
Timber thickness	15–180 mm	15–180 mm	40–240 mm
Max. cross sections	50 x 730 mm 100 x 600 mm 180 x 280 mm	50 x 1000 mm ¹⁾ 100 x 870 mm ¹⁾ 180 x 500 mm	50 x 850 mm 100 x 750 mm 220 x 340 mm
Max. timber weight	200 kg	200 kg	200 kg
Min. cut length	130 mm ²⁾	130 mm ²⁾	130 mm ²⁾
Saw motor power	7.5 / 11 kW	11 / 15 kW	7,5 / 11 kW
Speed of saw blade	1480 rpm	1480 rpm	1480 rpm
Saw blade diameter	800 mm	800 / 900 mm	900 mm
Feed motor power (rated / pulse)	4 / 9 kW	4 / 9 kW	4 / 9 kW
Max. feed speed	160 m/min.	160 m/min.	160 m/Min.
Top roller diameter	129 mm	129 mm	129 mm
Bottom roller diameter	159 mm	159 mm	159 mm
Roller pressure (adjustable)	2–4.5 kN	2.5–5 kN	2–4,5 kN
Dust outlet diameter	200 mm	200 mm	200 mm
Dust outlet diameter on extraction funnel (recommended option)	250 mm	250 mm	250 mm
Required air speed	25–30 m/sec.	25–30 m/sec.	25–30 m/sec.
Required quantity of air	2200–3300 m ³ /h	2200–3300 m ³ /h	2200–3300 m ³ /h
Working height	approx. 850 mm	approx. 850 mm	approx. 950 mm
Weight	approx. 2000 kg	approx. 2200 kg	approx. 2100 kg

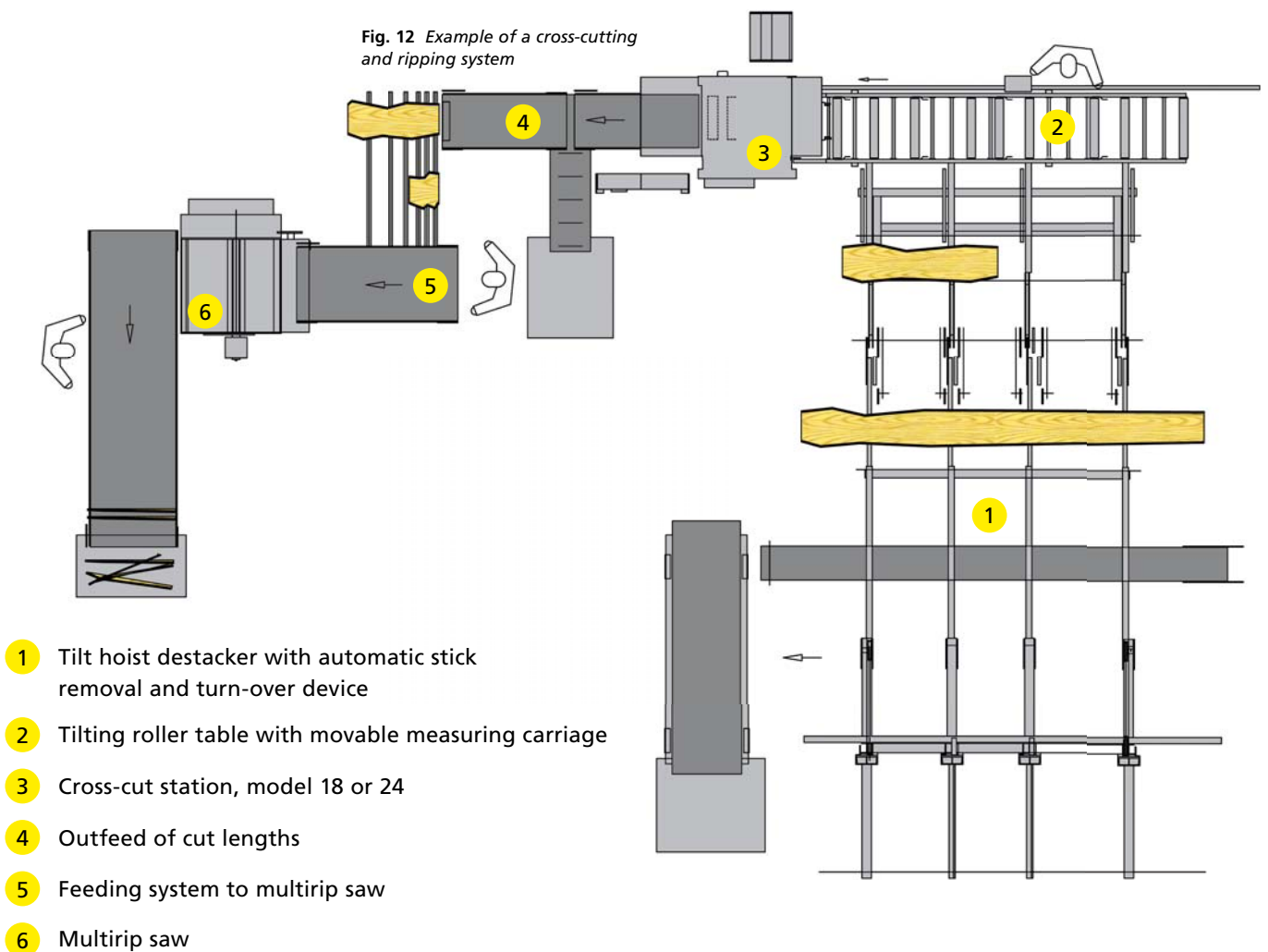
¹⁾ with 800 mm saw blade diameter

²⁾ 260 mm at end of board



AUTOMATIC CROSS-CUTTING AND RIPPING SYSTEMS

Fig. 12 Example of a cross-cutting and ripping system



- 1 Tilt hoist destacker with automatic stick removal and turn-over device
- 2 Tilting roller table with movable measuring carriage
- 3 Cross-cut station, model 18 or 24
- 4 Outfeed of cut lengths
- 5 Feeding system to multirip saw
- 6 Multirip saw

The model series 18 and 24 heavy-duty CNC controlled Cross-Cut Systems are designed for cutting large solid wood and glue-laminated cross sections

Special features:

- High acceleration
- Fast cutting sequence due to a saw arm of low weight and increased stability and an AC servomotor on model 18GE/18KGE
- Reliable feed of difficult timber
- Easy-to-service mechanical components
- Sturdy feed drive by oil-immersed sprockets and cardan shafts
- Heavy machine frame with tiltable top cover
- Sawdust guiding system for efficient dust extraction