mariani

PCK

AUTOMATIC EMPTY PALLET INSPECTION AND CHECKING SYSTEM

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Operating speed

Max. operating speed : 200 pallets per hour

Main features

The line consists of a number of stations designed to de-stack the pallets (1)at the infeed, verify the dimensions and quality (2) before separately re-stacking both damaged (3)and good (4)pallets.
The automatic control station checks the length, width height, possible lack of wooden blocks and the top and base boards of each pallet. The control system combines the use of specially positioned mechanical feelers and optical recognition sensors.

A system for testing the strength of the pallet is also available whereby a concentrated load of 500 kgs is applied in the middle of the pallet. A facility for controlling badly nailed pallets can also be offered.

- fully automated system and high quality of the components guarantee precise checking during the control phases.

- the production process is optimised as poor quality pallets are eliminated.

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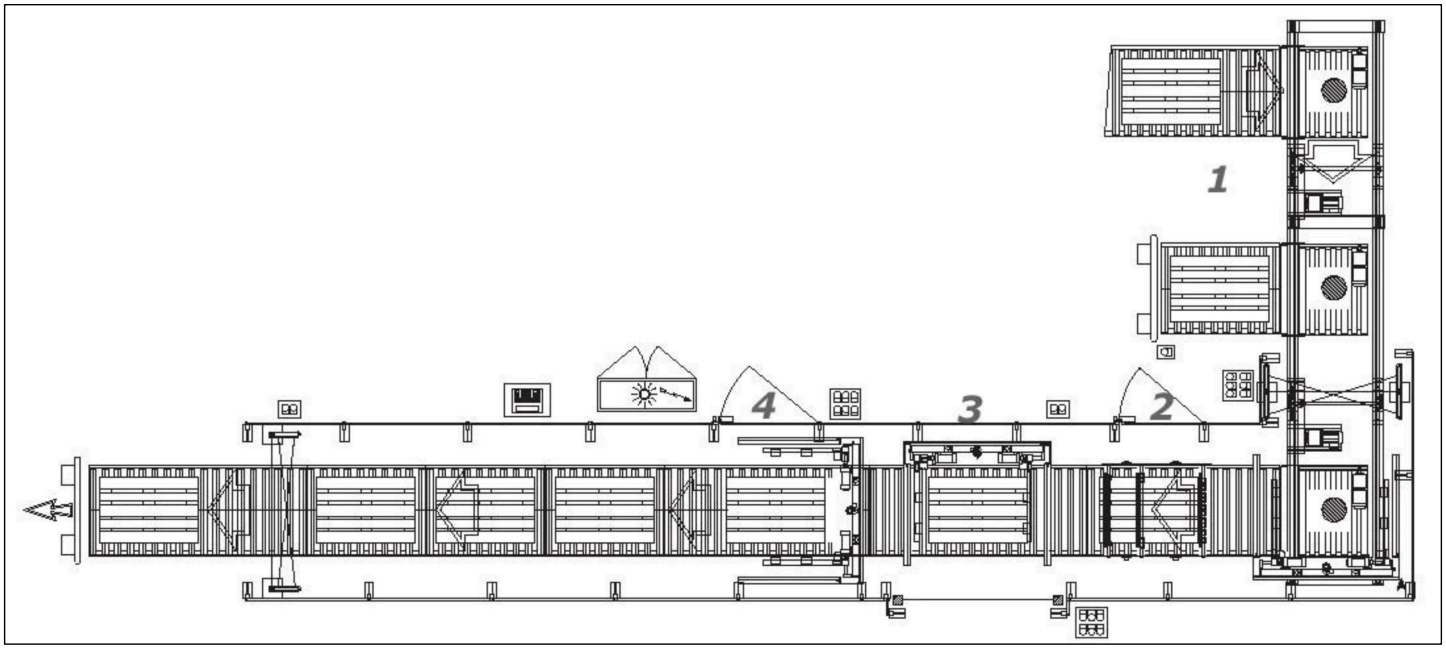

Technical characteristics

The automatic pallet checking system checks a number of parameters of each pallet; if such parameters are found out of the set tolerance (see sketch below) the pallet will be rejected. During the checking operation it is possible to display any fault of the pallet through an operator's interface.

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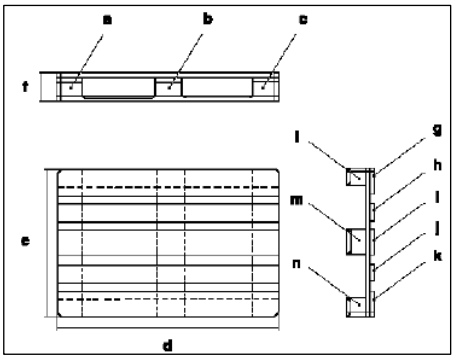
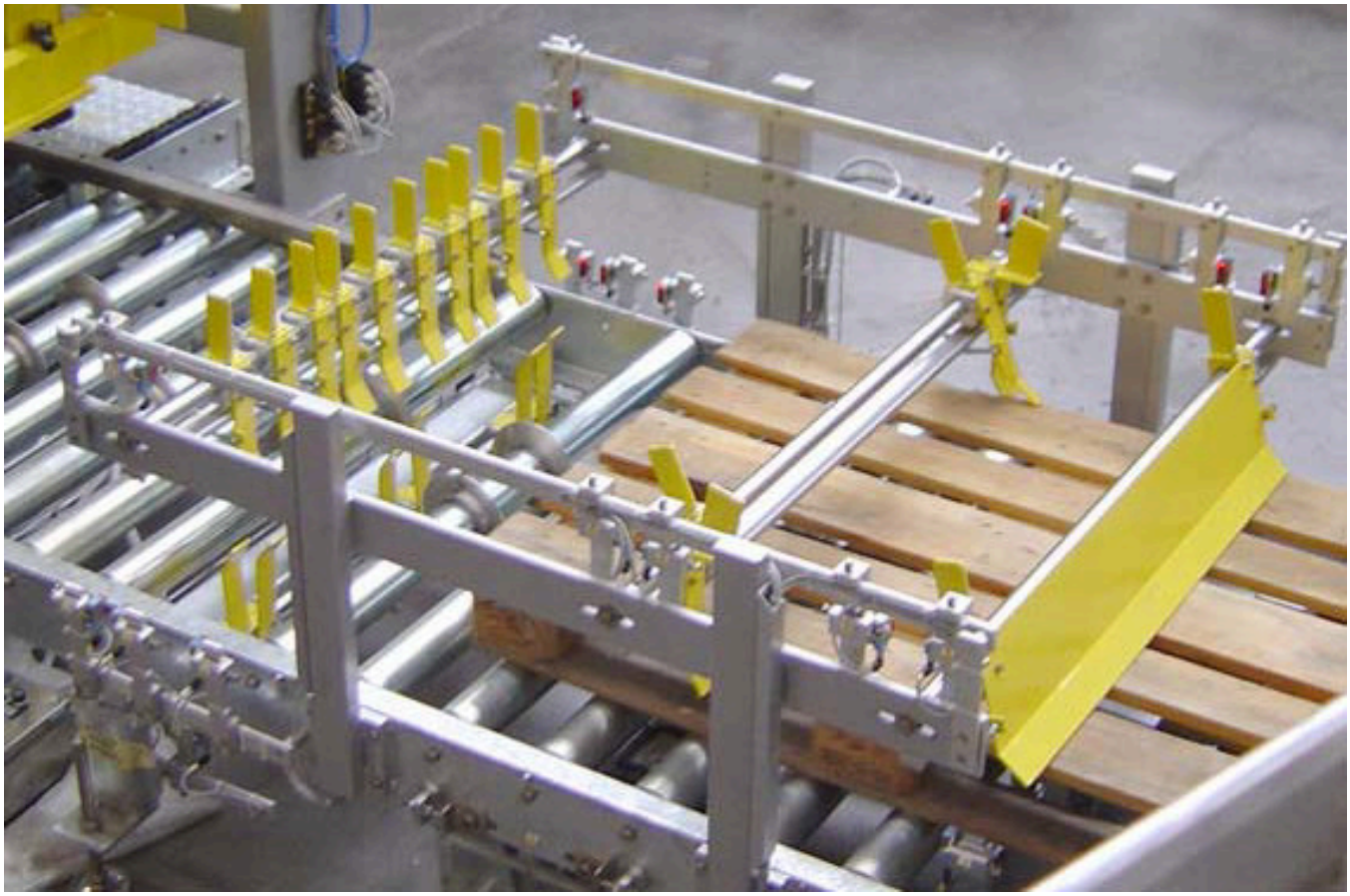
Description and Functions

First station: dimensional check

- pallet too long;
- pallet too short;
- pallet too high;
- pallet too low;
- lack of wooden blocks; one or more blocks missing a, b, c;
- pallet too large;
- pallet too narrow;
- lack of upper boards; one or more boards g, h, i, j are missing;
- lack of lower boards; one or more boards l, m, n are missing.

Pallet subject to check parameters





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Length check

It is carried out just once while the pallet is located between photocells B17-B20-B21 (signal of checking start) and photocell B10. If B10 photocell is activated, the pallet is found to be too long.
At the same time the pallet too short is detected by means of B12 photocell.

Height check

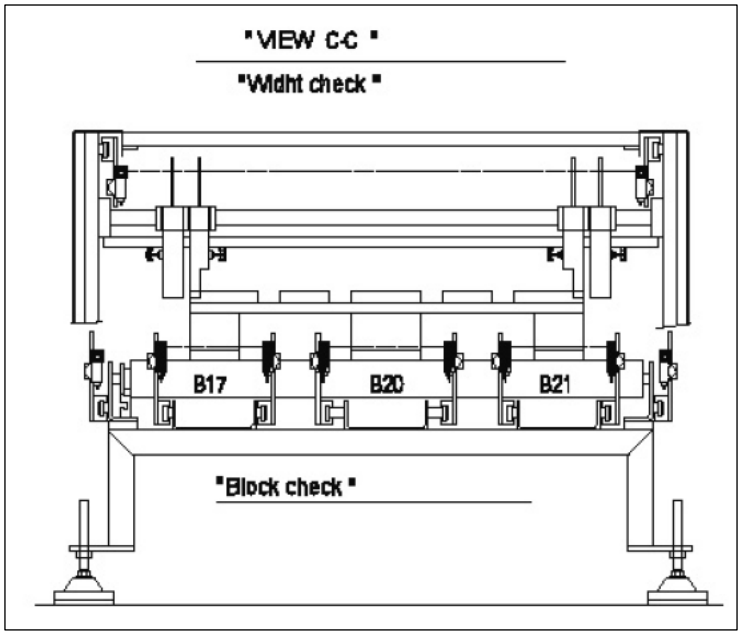
It is carried out in continuous by means of a feeler pin activating B15 photocell which reveals the pallet too high. The same photocell determines the pallet being too low when B16 photocell is not released. The check starts when the pallet intercepts B17-B20-B21 photocells.

Wooden block check

It is carried out by means of B17-B20-B21 photocells. Each photocell activates the two other photocells which will detect the missing blocks.

Width check

It is carried out by means of two feeler pins; if activated, the feeler pins will activate B13 photocell which is always on giving the signal of pallet too large.



Two other feeler pins will check the too narrow pallet with the engagement of B14 photocell. This kind of check is carried out for a certain time starting from the impulse given by one of the three photocells B17-B20-B21 being engaged.

Check of the upper boards

It is carried out by n° 10 feeler pins; each one can activate photocell B7 causing a fault signal. The check starts with B11 photocell and finishes with one of the three photocells B17-B20-B21.

Check of the lower boards

It is carried out by n° 6 feeler pins; each one can activate photocell B6 causing a fault signal. The check starts with B11 photocell and finishes with one of the three photocells B17-B20-B21.

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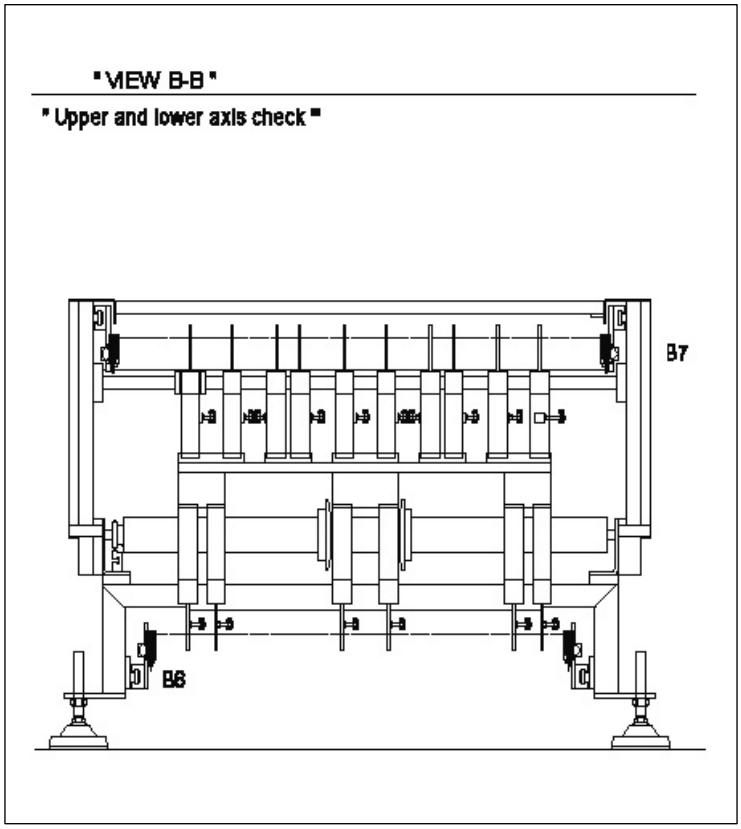
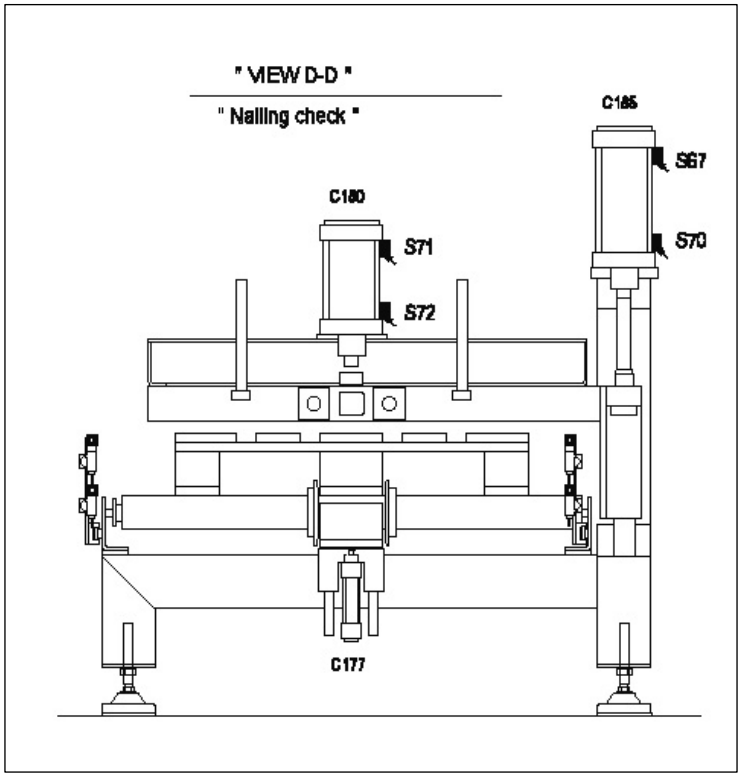


Second station: nailing check

This station will allow to check the consistency of the lower board nailing.



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Sequence of the nailing check

The pallet enter the station, stops against the pallet stop controlled by cylinder C177 activating B75 photocell detecting pallet presence.
The holding hands controlled by cylinders C187A-B descend and close.
The pallet is lifted by cylinder C185 till a certain height predetermined by Sensor S67.
Cylinder C190 will activate a special device forcing the centre of the pallet towards the ground causing a flexure and consequently the lowering of one or more badly nailed lower boards.
If this is the case the pallet is rejected and sent to the poor quality pallet stacker.
The height of the pallet subject to nailing check can vary between 135 and 155 mm.

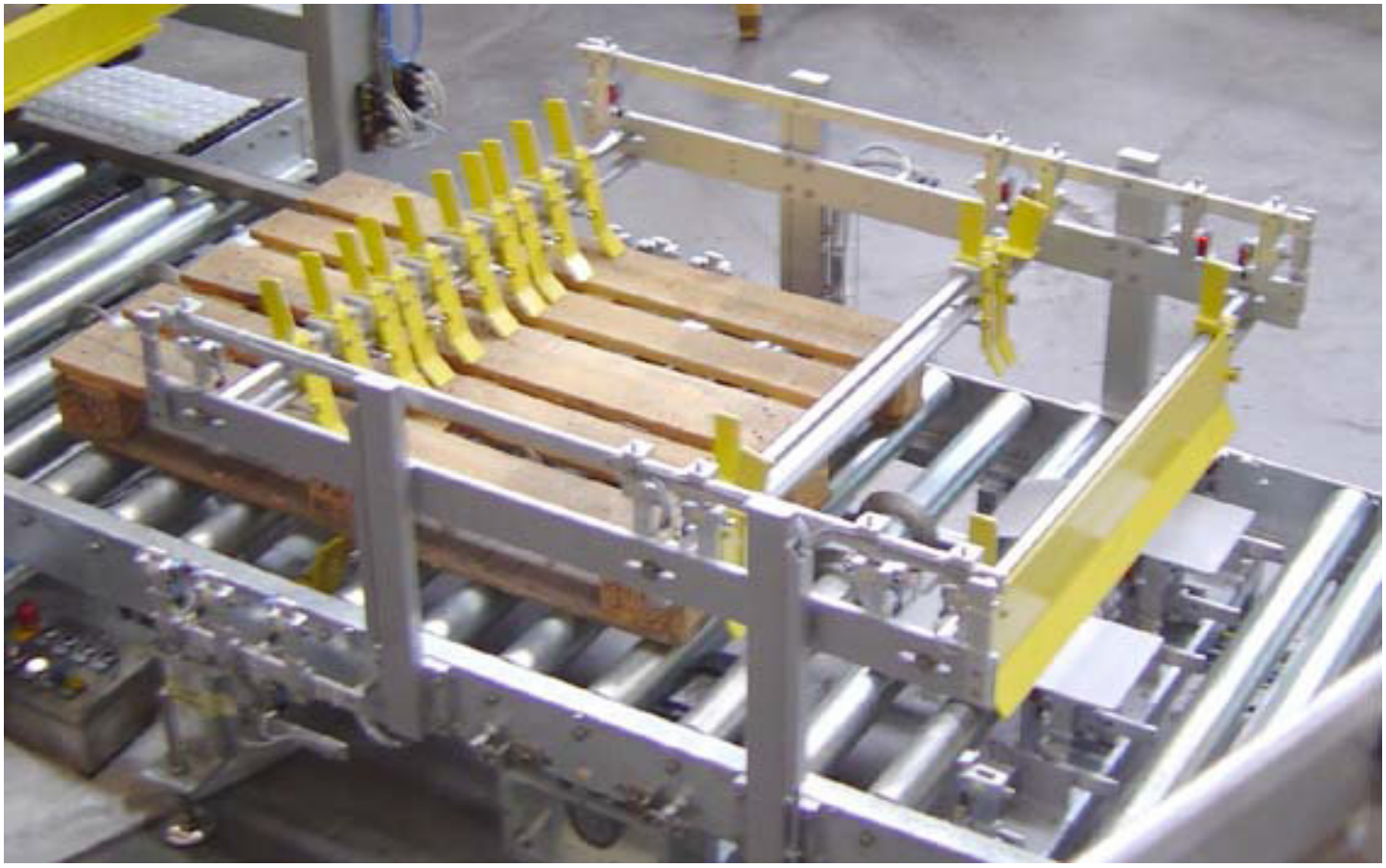
Depending on the pallet height the nailing check can be carried out in two ways

Low pallet (135 mm):

- after the lifting the photocells B80 and B81 are not activated;
- the load is pushed towards the bottom;
- one of the photocells B80 or B81 (high pallet detecting photocells) is activated, the pallet is found faulty.

High pallet (155 mm):

- after the lifting the photocells B76 and B77 are engaged;
- the load is pushed towards the bottom;
- one of the photocells B76 or B77 (high pallet detecting photocells) is activated, the pallet is found faulty.



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