

ROBO-POTSV1

THE ECONOMICAL SOLUTION FOR FLEXIBLE FEEDING
AND INSPECTION OF PARTS WITH A CCD CAMERA SYSTEM

MRW
C.M.FUISTING



The standardised system solution with integrated CCD image processing for the feeding and inspection of parts of any profile.

Reliability

The CCD camera system functions utilising the transmitted light process. The material and surface quality of parts does not effect the measuring accuracy.

Versatility

Where required the camera lighting can be adjusted precisely to focus on a specific part profile. A wide range of tried-and-tested special programs facilitates solutions to the most difficult inspection tasks.

With space to memorize 120 items, provides access to a wide variety of parts.

Simple operation

Functions and their associated values are specified automatically. The teaching of new parts is simply a matter of "selecting the desired part number", pass the component in front of the camera on the conveyor belt camera, and then initiating operation.

Options

Basic equipment including conveyor belt with integrated CCD camera system and computer, ready for installation on any feeding system. Alternatively a complete system with conveyor belt, integrated CCD camera system, vibration parts feeder with diameter from Ø 400 mm to Ø 800 mm, mounted together on base plate.

Extras

The machine table, soundproof enclosure and bulk store hoppers can be supplied on request.

Economical

The use of standardised mechanical and electronic components makes the system competitive in price with comparable mechanical feeding devices.

Short delivery times

Standardisation makes it possible to keep pre-fabricated systems in stock. Delivery times can be reduced to 2 to 3 weeks.

General information

The **MRW ROBO-POT SV1** consists of a conveyor belt with an integrated CCD camera, a camera cleaning air nozzle, a return nozzle, a separating nozzle, and the computer. The device is easy to install on any feeder systems, such as bowl-, step- or centrifugal feeders.

The system can be supplied together with vibration parts feeders in a range of sizes, coatings and if necessary with tooling fitted.

One supplier – **MRW**, provides the machine table, soundproof enclosure and hopper.

Area of application

- Feeding of parts regardless of their materials and profile, with simultaneous part identification and inspection
- Feeding and simultaneous separation of faulty and incorrect parts
- Separation of mixed parts
- Part identification and counting in conjunction with a packaging machine

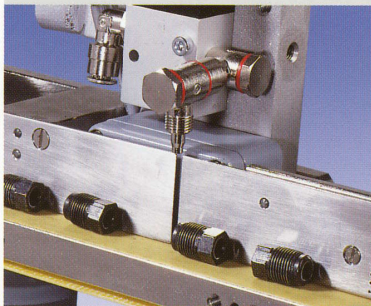
Range of parts handled

Generally, any parts can be tested, as long as their conveying position is stable, they do not roll in the conveying direction, they do not stick, and do not carry a static charge.

For oily parts, in particular rotationally symmetric parts above a certain size, an oil-proof version is available.

Camera system

- A CCD camera is housed in a protected position behind the part guide rail, with an automatically activated cleaning nozzle
- Resolution 14 µm
- Camera lighting with a special long-life LED. Lamp holder adjusted in any direction for optimal lighting of difficult part profiles
- Inspecting of parts on cycling conveyor, testing method light/dark contrast



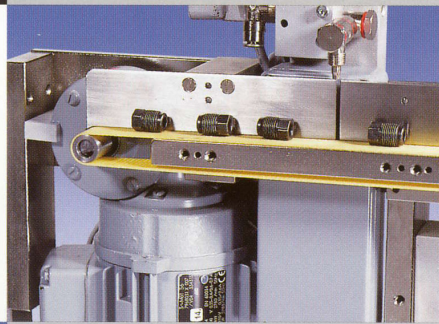
ing for flexible

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The standard version enables inspection of parts with:

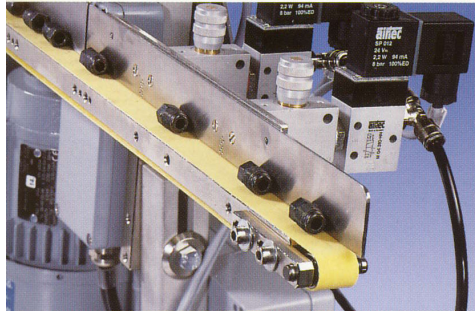
a length from 2.0 mm to 80 mm
a diameter or height from 0.5 mm to 30 mm
a maximum width of 30.0 mm

Special applications and dimensions are considered on request.



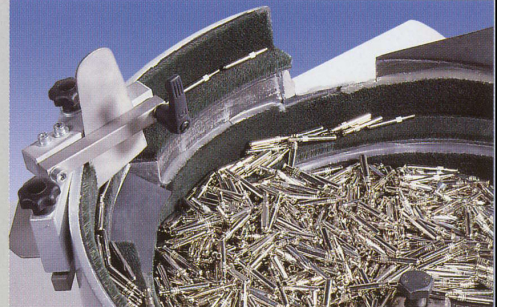
◀ Conveyor

- The conveyor is specially designed to the camera system; easily accessible, clear structure and low maintenance
- Controlled tacho generator, variable speed conveyor motor designed for continuous operation in an industrial environment permits programming of various recallable conveyor-speeds
- Large reserve capacity even when extra-long and extra-wide belts are used



◀ Returning and separating devices

- One valve for returning parts to the bowl feeder and one for the separation of parts from the parts flow
- Special nozzles, integrated into the part guide rail, with short connections to the valves
- Each valve can be controlled separately by means of independent adjusters
- Based on the belt speed, the overall length of the part, and the valve distances, the computer determines the optimal air pulse timing and air pulse duration
- This makes it possible to separate even the smallest parts accurately – also at high conveyor belt speeds



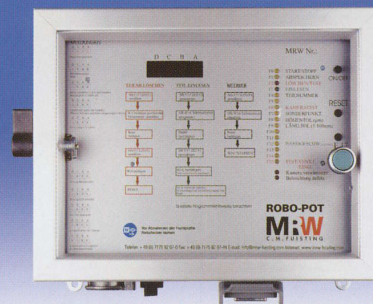
Vibration parts feeders ▲

Generally, stepped bowl feeders are used. These can be adapted optimally to the outgoing conveyor.

Depending on the part size and the desired storage volume, vibratory bowl feeders with a diameter of 400 mm, 650 mm or 820 mm are available.

The bowls are fitted as standard with a universal, manually adjustable vertical and horizontal tooling. Depending on the particular requirements, special tooling can be supplied.

Coatings are selected in accordance with the feed properties of the parts. Standard is 2 mm thick polyethylene. Other coatings are available on request. If feed speed, smooth operation, gentle handling of parts and conveying of oily parts are a priority, the best choice is a FICON brush lining.



▲ Computer

- Developed by MRW with particular emphasis on ease of operation, even by personnel having no experience with PCs
- Power supply, computer and controller for conveyor belt and vibratory bowl feeder are contained in a lockable housing from Rittal
- Up to 120 component profiles can be memorized
- If necessary, all computer functions may be adjusted or changed directly without additional equipment
- Display of inspecting functions, inspecting results and selftest functions
- Pressure drop or lack of parts causes automatic switch-off
- Inputs/Outputs and power supply for additional sensors and communication with a higher-level PLC
- Integrated control unit for electromagnetic vibrating systems; the computer controls the vibratory bowl feeder to provide a measured distance between the parts
- Simple teach mode for new parts by means of pre-programmed settings in teach-in procedure

ETC philosophy

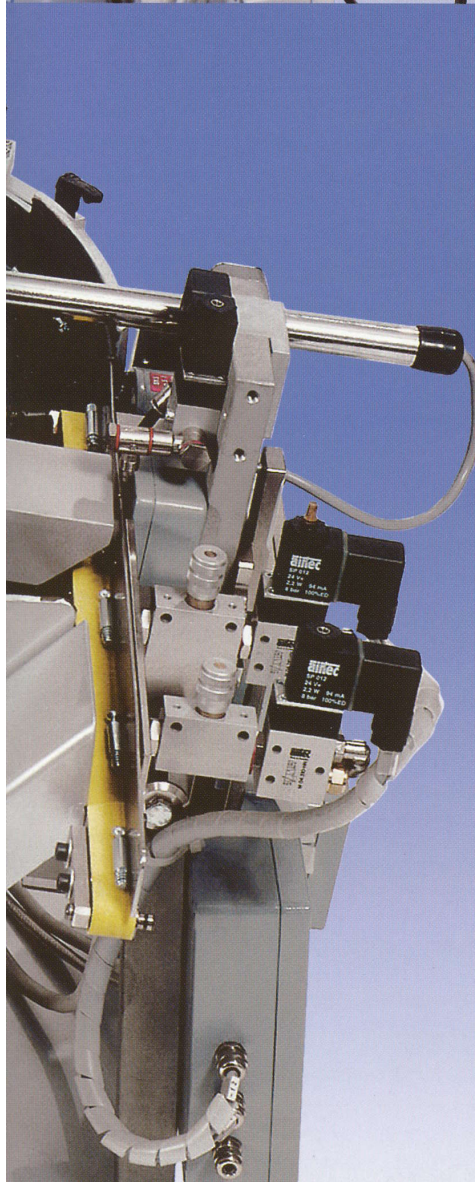
All mechanical, electrical and pneumatic components are designed or integrated in such a way that any malfunctions can be detected immediately without having to remove any unnecessary cover plates or casings.

The conveyor motor and the camera are connected directly to the computer via plug-in electric cables. They can be exchanged in a matter of minutes, and no special knowledge is required.

The computer essentially comprises two boards, which can be exchanged simply by releasing screw and plug connections.

Warranty and customer service

12-month warranty on spare parts or repairs at the factory. Alternatively, 24-hour on-site service with billing for expenses incurred.



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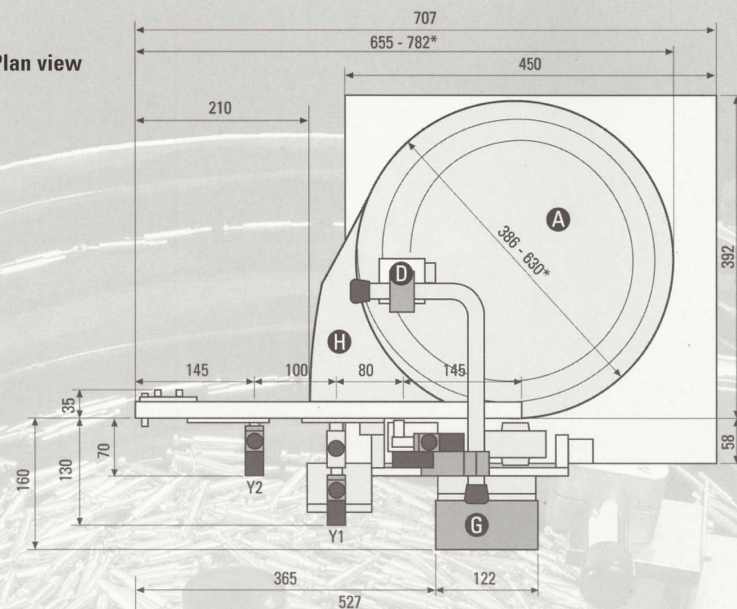
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Technical Data

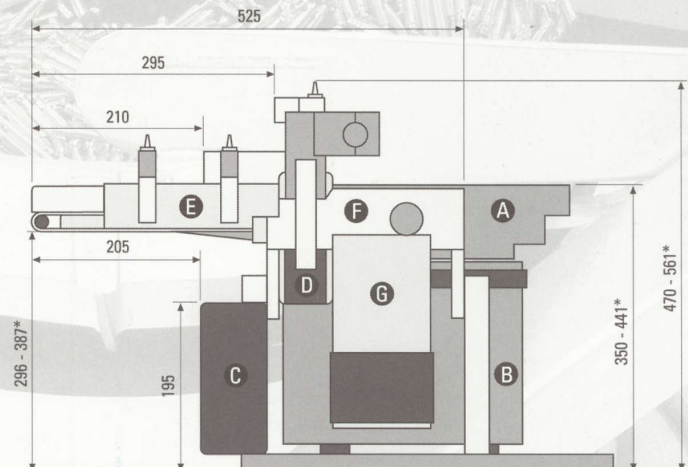
- A Bowl feeder (variable diameter)
- B Drive unit
- C Terminal box
- D Light source and CCD camera
- E Conveyor belt fitted with 2 valves for rejecting and ejecting of parts
- F Mounting bracket to enable adjustment of conveyor angle
- G Conveyor motor with controller on the mounting bracket
- H Rejecting of parts
- I Front view of conveyor

Plan view



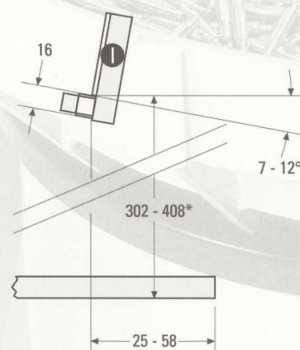
*These dimensions depend on the size of the bowl feeder and the drive unit

Side view



*These dimensions depend on the size of the bowl feeder and the drive unit

Section view of the conveyor belt



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