# Checkbox CHB-C, Compact

**FESTO**
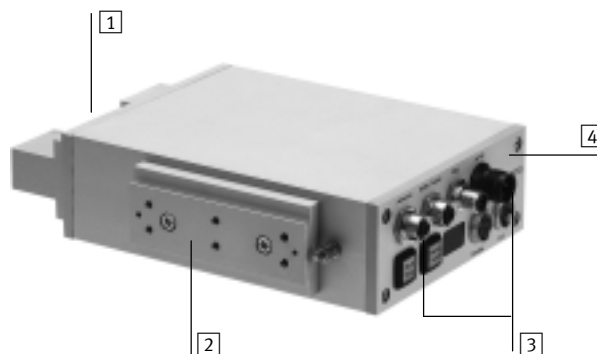
# Checkbox CHB-C, Compact

**FESTO**

Key features

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**High functionality**

The integrated inspection units in detail

The Checkbox CHB-C consists of a housing which comprises all the necessary components. In addition to the user interface (keys, LEDs, displays), the connectors for the electrical connection of actuators, buffer zone sensors, diagnostics PC, voltage supply, encoder and master PLC, there is the entire imaging sensor system (optics, lighting and camera).

The optical channel underneath the Checkbox CHB-C is open towards the rear side, thus it can be easily integrated in the material flow.



| 1 | Optical channel | 3 | Electrical connections |
|---|---|---|---|
| 2 | Mounting elements | | – Digital I/O |
| | – 6xM5 threaded hole | | – Diagnostic interface |
| | – Dowel pins | | – Encoder |
| | – Dovetail guide for connecting kit HMSV-12 | | – Voltage supply |
| | | 4 | Front plate with the user interface |
| | | | – Buttons |
| | | | – Control LEDs |
| | | | – Display |

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**Optimum inspection of parts**

Economical, variable, reliable

Components are scanned as they pass through the "optical channel". Compared with recognition by means of an area scan camera, this image detection concept has major advantages: A mixture of any number of parts as well as objects of considerable length (up to 1 000 mm) can be recognized and processed without the need to observe minimum distances.

In order to obtain a reliable and reproducible inspection result, the speed of the parts to be checked must be constant and their position stable. A fluctuating object speed can be compensated by means of connecting an encoder.



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# Checkbox CHB-C, Compact

**FESTO**
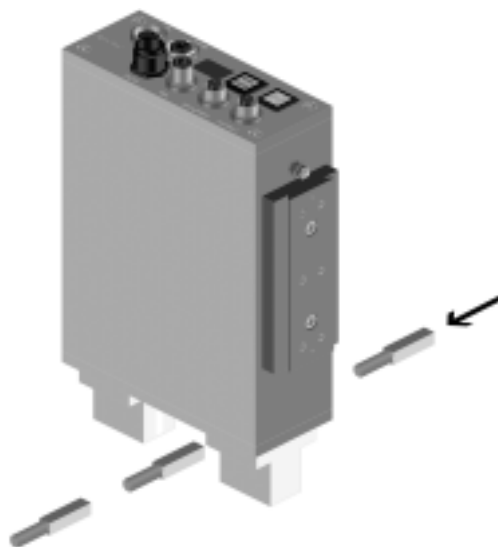
Key features

## Which parts are suitable?



## Here is a small selection of the many possibilities:

- Axes
- Bolts
- Brushes
- Buttons
- Ceramic seals
- Curtain hangers
- Drill bits
- Drills
- Fuses
- Game pieces
- Glass ampoules
- Inserts
- Insulating terminals
- Lever stoppers
- Link plates

- Lipstick casings
- Lock nuts
- Mouldings
- Mountings
- Needles
- O-rings
- Pen tops
- Plastic housings
- Plug connectors
- Screws
- Self-locking nuts
- Sensor housings
- Shafts
- Sleeves
- Small wares

- Sockets
- Spring washers
- Springs
- Stampings
- Switch contacts
- Tablets
- Threaded pins
- Toothbrush components
- Turned parts
- Wall plugs
- Washers
- Wooden dowels
- Zip-fastener components

## In which branches of industry is the Checkbox CHB-C used?

- Metalworking industry
- Electrical engineering industry
- Woodworking industry
- Electroplating industry
- Injection moulding industry
- Packaging industry
- Pharmaceutical industry

- Cosmetics industry
- Jewellery industry
- Textile and clothing industry
- Assembly-systems industry
- Food industry
- Precision engineering industry

# Checkbox CHB-C, Compact

**FESTO**

Key features

## What does the camera see?

Part to be checked
Insulating terminal insert



Part to be checked
Valve spring



Camera image
Insulating terminal insert



Camera image
Valve spring
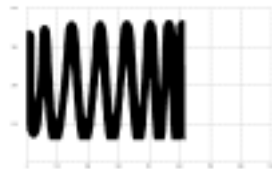


Part to be checked
Glass ampoule



Part to be checked
Glow bar



Camera image
Glass ampoule



Camera image
Glow bar



Part to be checked
O-ring



Part to be checked
Aroma valve



Camera image
O-ring



Camera image
Aroma valve

# Checkbox CHB-C, Compact

**FESTO**

Peripherals overview
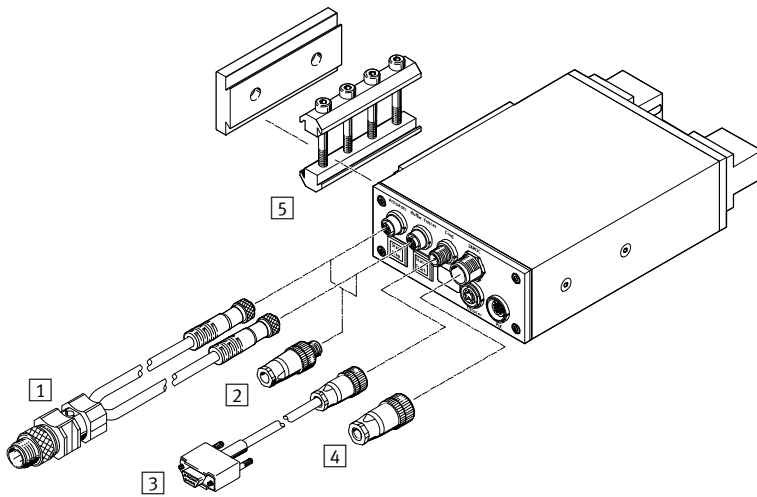


| Mounting attachments and accessories | ➔ Page/Internet |
|---|---|
| 1 DUO cable<br>KM12-DUO-M8-GDGD | 10 |
| 2 Plug<br>SEA | 10 |
| 3 Programming cable<br>KDI-SB202-BU9 | 10 |
| 4 Socket<br>NTSD | 10 |
| 5 Adapter kit<br>SBOA-HMSV | 10 |
| − Connecting cable<br>KM12-M12-GSGD | 10 |
| − Software | 9 |

# Checkbox CHB-C, Compact

Technical data

**FESTO**

Checkbox CHB-C-X



| General technical data | | |
|---|---|---|
| Min. component ⌀ | [mm] | 0.5 |
| Max. component ⌀ | [mm] | 25 |
| Min. component length | [mm] | 1 |
| Max. component length | | Dependent on belt speed and required resolution |
| Component range | | Rotationally symmetrical parts and pre-oriented parts of any shape |
| Internal passage of optical channel | [mm] | 60 |
| Internal height of optical channel | [mm] | 40 |
| Camera resolution | [mm] | 0.06 |
| Exposure time | [µs] | 128 … 1 024 |
| Number of part memories | | 12 |
| Counting function | | Yes |
| Quantity pre-selection | | CheckKon software |
| Counting range | | 1 … 2 billion |
| Max. number of different orientations per memorised part | | 8 |
| Orientation | | Part orientation function within checking and counting process can be switched off via diagnostic interface |

| Electrical data | | |
|---|---|---|
| Operating voltage DC | [V] | 24 |
| Permissible voltage fluctuation | | ±15% |
| Current consumption at load-free outputs | [mA] | 750 |
| Internal fuse protection | | 8 A fuse |

| Operating and environmental conditions | | |
|---|---|---|
| Ambient temperature | [°C] | −5 … +50 |
| Storage temperature | [°C] | −20 … +70 |
| Protection class | | IP64 |
| CE marking (see declaration of conformity) | | To EU EMC Directive |
| Installation site | | Dry, screened from extreme external light sources, cleanest possible ambient air |

# Checkbox CHB-C, Compact

**FESTO**

Technical data

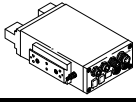| Interfaces to EN 61 131-2 | |
|---|---|
| Outputs | Part acceptable and correctly oriented |
| | Part acceptable but incorrectly oriented |
| | Wrong part |
| | Feeder control |
| | Conveyor belt control/ready for operation |
| | "Warning" status signal |
| | Error output |
| | Preselect counter reached |
| | All outputs electronically limited to max. 700 mA |
| | Max. sum current at "PLC" connection 1A |
| Inputs | Buffer sensor 1 |
| | Buffer sensor 2 |
| | Camera enable |
| | External error |
| | Counter reset |
| | External start |
| | External sensor |
| | Key lock |
| | Type select 0 |
| | Type select 1 |
| | Type select 2 |
| | Type select 3 |
| | External teach |
| Connection for encoder | To RS 485 specification |
| Diagnosis interface | RS 232 interface (115 kBaud), socket, M12x1, 4-pin |

**Dimensions**  Download CAD data ➔ **www.festo.com**
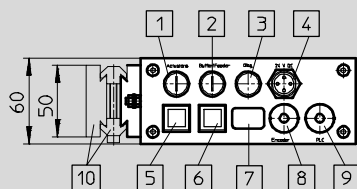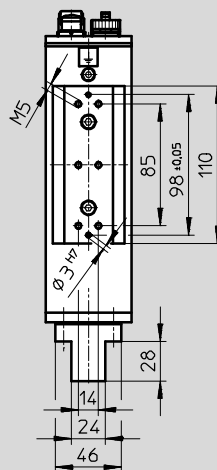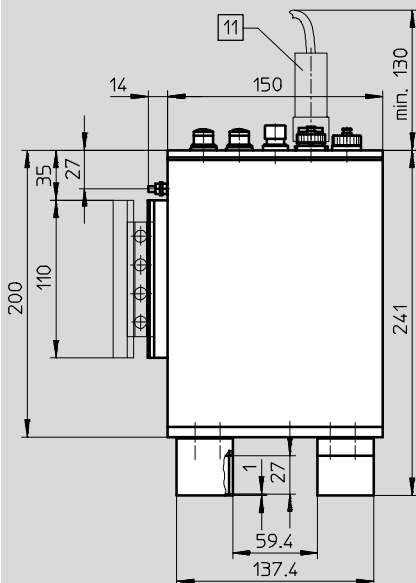


1  Actuator connection
2  Buffer/feeder connection
3  Diagnostics connection
4  24 V DC connection
5  Start/stop button
6  Status/Teach button
7  Display
8  Encoder connection
9  PLC connection
10  Connecting kit HMSV-12 (not included in scope of delivery)
11  Connector plug, 4-pin M18 socket (not included in scope of delivery)

## Checkbox CHB-C, Compact

**FESTO**

Technical data

| Ordering data | | Part No. | Type |
|---|---|---|---|
| Designation | | | |
|  | Checkbox CHB-C-X | **536084** | **CHB-C-X** |

| Ordering data – Documentation | | | | |
|---|---|---|---|---|
| | Description | Language | Part No. | Type |
|  | User documentation included in scope of delivery | German | **533411** | **P.BE-CB-COMP-DE** |
| | | English | **533412** | **P.BE-CB-COMP-EN** |

# Checkbox CHB-C, Compact
Accessories

**FESTO**

| Software to meet individual requirements |
|---|

**CheckKon**



**Performance characteristics**

Using this software the processes within the Checkbox CHB-C can be displayed, logged and adapted from the camera image evaluation through to the I/O parameters.

This means:
- Transfer of new programs to the Checkbox CHB-C
- Display and editing of system parameters
- Display of the evaluation of the last inspected parts recorded
- Display and logging of part contour and characteristics derived
- Display and print-out of system configuration

**CheckOpti**
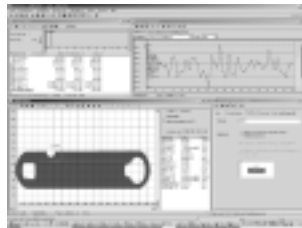


**Software program**

"CheckOpti" is used in cases where the standard Checkbox CHB-C learning program reaches its limits due to the fact that contour differences are too small, meaning that part orientation or quality features cannot be reliably recognised.
"CheckOpti" enables a complete analysis of the Checkbox CHB-C recognition processes based on the contour data of the parts to be inspected.

Additional, high performance test features can be defined and optimised if necessary. The new configuration can subsequently be transferred to the Checkbox CHB-C. Further product information
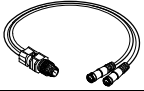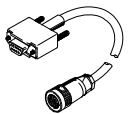➔ Internet: sbox-q

| Ordering data – Software | | | | |
|---|---|---|---|---|
| | Version | Language | Part No. | Type |
| 💿 | CheckKon software | German, english | **194496** | **P.SW-KON** |
| 💿 | CheckOpti software | German, english | **568339** | **P.SW-OPTI** |
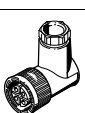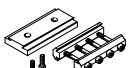
# Checkbox CHB-C, Compact

Accessories

**FESTO**

| Ordering data | | | | | |
|---|---|---|---|---|---|
| | Application | Connection | Cable length [m] | Part No. | Type |
| **DUO cable** | | | | Technical data ➜ Internet: km12-duo | |
| | Connection actuator or buffer/feeder | Straight plug, M12x1, 4-pin<br>2x straight socket, M8x1, 3-pin | 0.6 | **18685** | **KM12-DUO-M8-GDGD** |
| **Connecting cable** | | | | Technical data ➜ Internet: km12-m12 | |
| | Connection actuator or buffer/feeder | Straight plug, M12x1, 4-pin<br>Straight socket, M12x1, 4-pin | 2.5 | **18684** | **KM12-M12-GSGD-2,5** |
| | | | 5 | **18686** | **KM12-M12-GSGD-5** |
| **Plug** | | | | Technical data ➜ Internet: sea | |
| | Connection actuator or buffer/feeder | Straight plug, M12x1, 4-pin<br>Type A, screw terminal | – | **192008** | **SEA-4GS-7-2,5** |
| | | | | **18666** | **SEA-GS-7** |
| | | | | **18779** | **SEA-GS-11-DUO** |
| **Programming cable** | | | | Technical data ➜ Internet: kdi | |
| | On diagnosis | Straight socket, M12x1, 4-pin<br>Straight socket, Sub-D, 9-pin | 5 | **150268** | **KDI-SB202-BU9** |
| **Socket** | | | | Technical data ➜ Internet: ntsd | |
| | For supplying the operating voltage | Straight socket, M18x1, 4-pin<br>Screw terminal | – | **18493** | **NTSD-GD-9** |
| | | | | **18526** | **NTSD-GD-13,5** |
| | | Angled socket, 4-pin<br>Screw terminal | | **18527** | **NTSD-WD-9** |

| Ordering data – Accessories | | | |
|---|---|---|---|
| | Description | Part No. | Type |
| **Connecting kit** | | Technical data ➜ Internet: hmsv-12 | |
| | With screw-on adapter plate | **177658** | **HMSV-12** |

# Checkbox CHB-C, Compact

Application examples

**FESTO**

**Orientation detection and quality inspection of electrocoils**

The Checkbox CHB-C checks the electrocoils and controls the complete supply process, e.g. a following turning station for turning incorrectly orientated good parts and a reject nozzle for sorting out bad parts.

The following features are checked:
• Orientation
• Diameter
• Length
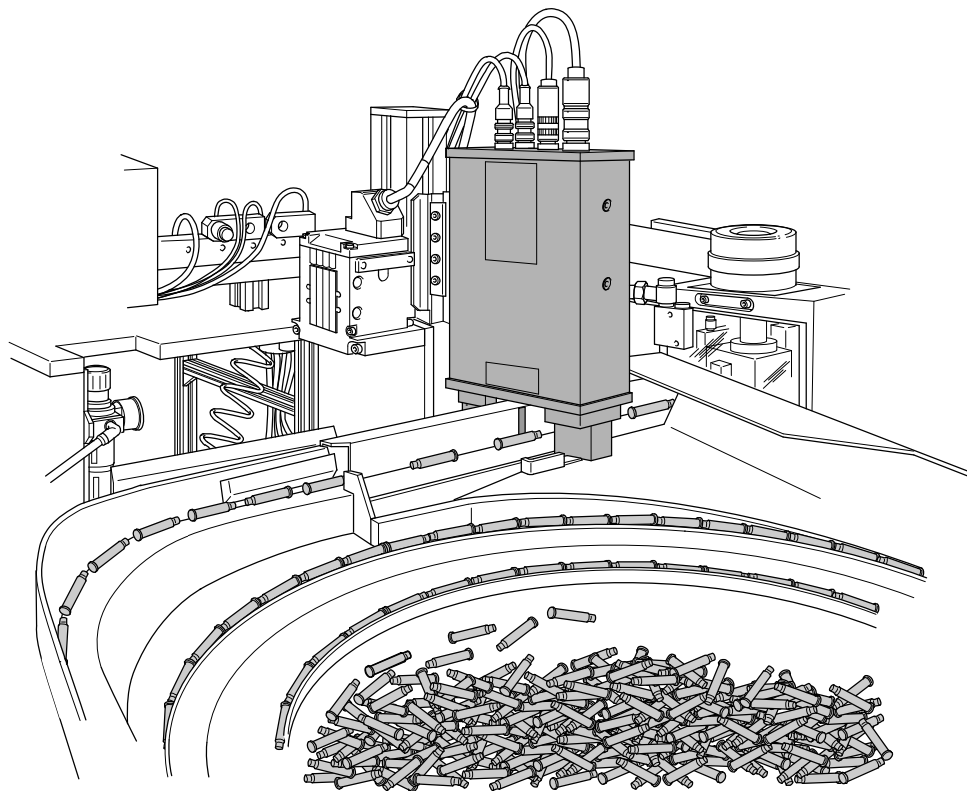


**Position and quality check of fibre optic parts**

The Checkbox CHB-C checks the transparent display elements, controls the parts flow and removes incorrectly orientated or faulty parts reliably by means of reject nozzles.

The following features are checked:
• Orientation
• Form
• Diameter