

New. Checkbox Compact

FESTO

Total quality
within the feed process:
The compact alternative



Info 503 →→

**Small in format –
big in performance:
The Checkbox Compact**

Profitability – newly defined

Contactless type identification, orientation detection and quality inspection of small components by means of the Checkbox Compact facilitates the constant, smooth feeding of conveyed parts within a production process. This means that interruptions in the feeding of components are a thing of the past and system availability increases significantly. At the same time, integrated quality inspection ensures a consistent high quality of the components supplied. Even at a high speed and resolution, the reliability of the Checkbox Compact is impressive.

User friendly – simply defined

All three Checkbox Compact variants are capable of automatically learning the components by means of the Teach-in function – without the need for any programming. This permits a maximum degree of retooling flexibility. The fine tuning required for special applications such as the detection and monitoring of minor contour variations or specific quality relevant measured variables can be effected by means of the user friendly software CheckOpti.

**Festo plug and work® –
clearly defined**

Anywhere and in particular where limited installation space is available, the Checkbox Compact is the answer. Thanks to its compact, industrially compatible design and clearly defined interface it can also be integrated individually into existing systems. Complex in-house facilities are therefore also a thing of the past.

**Checkbox Compact –
the economical alternative.**

Checkbox Compact:

The smaller brother of the familiar, tried and tested Checkbox

Optoelectronic type identification, orientation detection and quality inspection the Festo way – in the form of fully integrated components in advanced, industry compatible and sturdy design.

The Checkbox Compact is available in three variants: The standard version “Checkbox Compact Classic”; the “PLC” version with additional facilities for communication with master controllers as well as the option of an encoder interface for greater precision requirements; and the new Checkbox “Plus” version with type memory for up to 16 different test objects as well as additional quality assurance functions.

Experience has taught that the use of intelligent optoelectronics is always particularly productive if complex component shapes, type diversity and high cycle rates are involved, e.g. the feeding of small components towards assembly, production and packaging units or for 100% quality inspection of components prior to packaging.



Checkbox Compact CHB-C

Key features

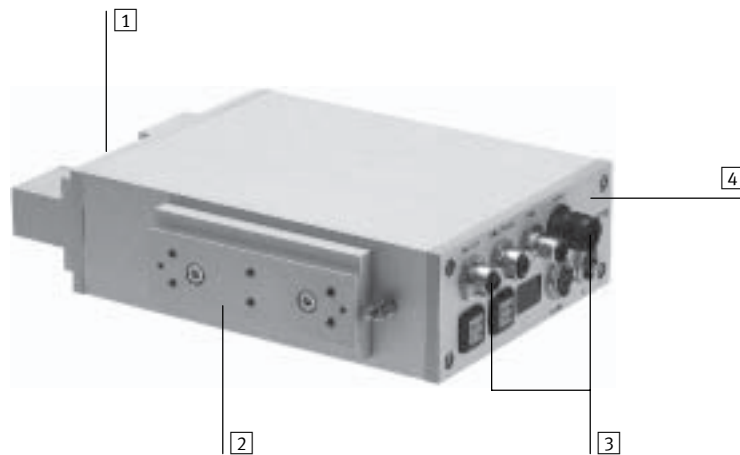
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High functionality

The integrated inspection unit in detail

The Checkbox Compact 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 Compact is open towards the rear side, thus it can be easily integrated in the material flow.



- | | | |
|---|---|--|
| <p>1 Optical channel</p> <p>2 Mounting elements</p> <ul style="list-style-type: none"> – 6xM5 threaded hole – Dowel pins – Dovetail guide for connecting kit HMSV-12 | <p>3 Electrical connections</p> <ul style="list-style-type: none"> – Digital I/O – Diagnostic interface – Encoder – Voltage supply | <p>4 Front plate with the user interface</p> <ul style="list-style-type: none"> – Buttons – Control LEDs – Display |
|---|---|--|

Checkbox Compact CHB-C

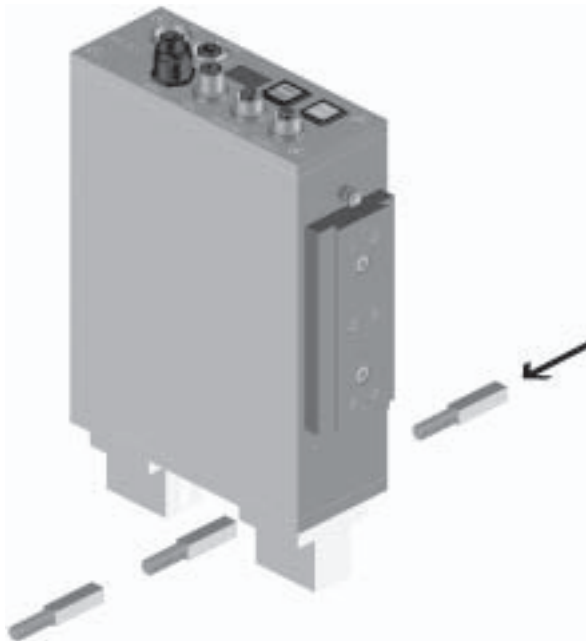
Key features

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 (PLC-/Plus-version).



Checkbox Compact CHB-C

Features

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Which parts are suitable?



Here is a small selection of the many possibilities:

- | | | |
|------------------------|---------------------|---------------------------|
| ■ Axes | ■ Lipstick casings | ■ Sockets |
| ■ Bolts | ■ Lock nuts | ■ Spring washers |
| ■ Brushes | ■ Mouldings | ■ Springs |
| ■ Buttons | ■ Mountings | ■ Stampings |
| ■ Ceramic seals | ■ Needles | ■ Switch contacts |
| ■ Curtain hangers | ■ O-rings | ■ Tablets |
| ■ Drill bits | ■ Pen tops | ■ Threaded pins |
| ■ Drills | ■ Plastic housings | ■ Toothbrush components |
| ■ Fuses | ■ Plug connectors | ■ Turned parts |
| ■ Game pieces | ■ Screws | ■ Wall plugs |
| ■ Glass ampoules | ■ Self-locking nuts | ■ Washers |
| ■ Inserts | ■ Sensor housings | ■ Wooden dowels |
| ■ Insulating terminals | ■ Shafts | ■ Zip-fastener components |
| ■ Lever stoppers | ■ Sleeves | |
| ■ Link plates | ■ Small wares | |

In which branches of industry is the Checkbox Compact used?

- | | |
|-----------------------------------|----------------------------------|
| ■ Metalworking industry | ■ Cosmetics industry |
| ■ Electrical engineering industry | ■ Jewellery industry |
| ■ Woodworking industry | ■ Textile and clothing industry |
| ■ Electroplating industry | ■ Assembly-systems industry |
| ■ Injection moulding industry | ■ Food industry |
| ■ Packaging industry | ■ Precision engineering industry |
| ■ Pharmaceutical industry | |

Checkbox Compact CHB-C

Key features

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What does the camera see?

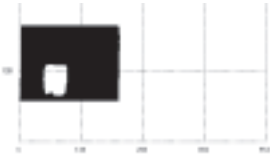
Part to be checked

Insulating terminal insert



Camera image

Insulating terminal insert



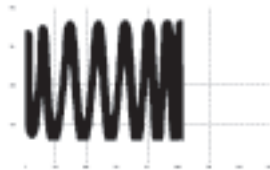
Part to be checked

Valve spring



Camera image

Valve spring



Part to be checked

Glass ampoule



Camera image

Glass ampoule



Part to be checked

Glow bar



Camera image

Glow bar



Checkbox Compact CHB-C

Data sheet

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Checkbox Compact Classic
CHB-C-C



Checkbox Compact PLC
CHB-C-P



Checkbox Compact Plus
CHB-C-X

General technical data				
Type		CHB-C-C	CHB-C-P	CHB-C-X
Component Ø	[mm]	0.5 ... 25		
Component length	[mm]	Depending on belt speed and required resolution		
Part 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 ... 1000		
Number of part memories		1	4	16
Counting function		–	Yes	
Quantity pre-selection		–	Desired quantities of good parts can be preselected via the diagnostic interface	
Counting range		–	1 ... 2 billion	
Orientation		Max. 8 different orientations per part type		
		–	Part orientation function within checking and counting process can be switched off via diagnostic interface	

Electrical connection technology				
Type		CHB-C-C	CHB-C-P	CHB-C-X
Operating voltage		24 V DC ±15%		
Current consumption at load-free outputs	[mA]	Typically 750		
Internal fuse protection		8 A fuse		

Operating and environmental conditions				
Type		CHB-C-C	CHB-C-P	CHB-C-X
Temperature range	[°C]	-5 ... +50		
Protection class		IP64		
Installation site		Dry, screened from extreme external light sources, cleanest possible ambient air		

Checkbox Compact CHB-C

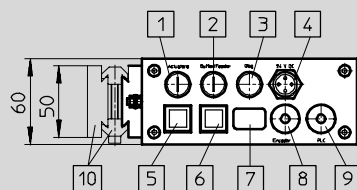
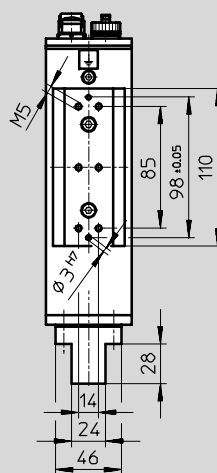
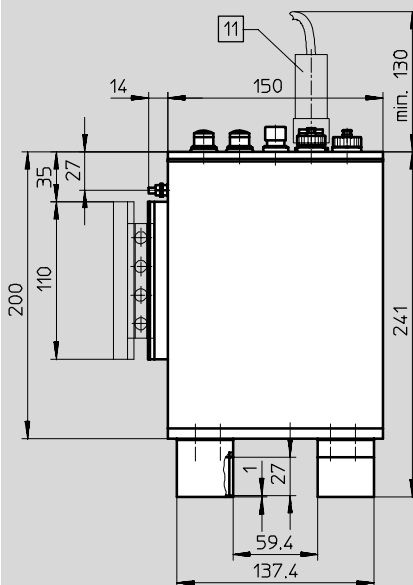
Data sheet

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Interfaces to EN 61 131-2			
Type	CHB-C-C	CHB-C-P	CHB-C-X
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	
Connection for encoder	–	To RS 485 specification	
Diagnosis interface	RS 232 interface (115 kBaud)		

Dimensions

Download CAD data → www.festo.com/en/engineering



- 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 (type CHB-C-P/X only)
- 9 PLC connection (type CHB-C-P/X only)
- 10 Connecting kit 177 658 HMSV-12 (not included in scope of delivery)
- 11 Connector plug, 4-pin M18 socket (not included in scope of delivery)

Checkbox Compact CHB-C

Data sheet

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Ordering data			
Version		Part No.	Type
Checkbox Compact Classic	User documentation included in scope of delivery	532 271	CHB-C-C
Checkbox Compact PLC		532 270	CHB-C-P
Checkbox Compact Plus		536 084	CHB-C-X
User documentation (for reorder)		Part No.	Type
German		533 411	P.BE-CB-COMP-DE
English		533 412	P.BE-CB-COMP-EN
French		533 413	P.BE-CB-COMP-FR
Spanish		533 414	P.BE-CB-COMP-ES
Italian		533 415	P.BE-CB-COMP-IT

Connecting kit HMSV-12

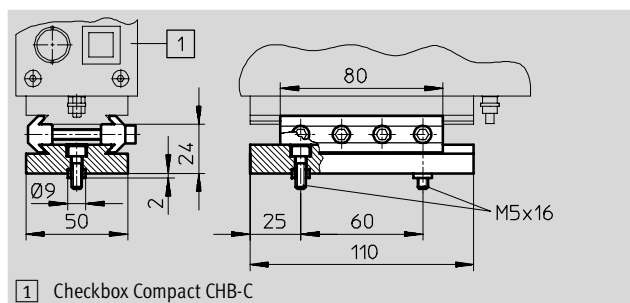
Material:

Adapter plate, dovetail clamps:

Wrought aluminium alloy

Centring sleeves: High-alloy steel

Screws: Galvanised steel



Ordering data			
Type of mounting	Weight [g]	Part No.	Type
Dovetail	283	177 658	HMSV-12

Programming cable KDI

Material:

Cable sheath: Polyvinyl chloride

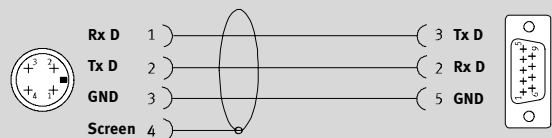
Round connector:

Polybutylenterephthalate

Socket: Steel



Terminal allocation



Pin 1: Received data

Pin 2: Transmitted data

Pin 3: 0 V

Pin 4: Screen

Pin 2: Received data

Pin 3: Transmitted data

Pin 5: 0 V

Ordering data					
Cable length [m]	Plug	Socket	Weight [g]	Part No.	Type
5	M12, 4-pin	9-pin	181	150 268	KDI-SB202-BU9

Checkbox Compact CHB-C

Data sheet

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Software to meet individual requirements

CheckKon



Performance characteristics

Using this software the processes within the Checkbox Compact 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 Compact
- 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 Compact 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 Compact 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 Compact.

Ordering data			
Version	Language	Part No.	Type
CheckKon software with manual	German	194 496	P.SW-CB-KON-DE
	English	194 497	P.SW-CB-KON-EN
CheckOpti software with manual	German	192 144	P.SW-CB-OPTI-DE
	English	192 145	P.SW-CB-OPTI-EN

Checkbox Compact CHB-C

Application examples

The Checkbox Compact in application

- Orientation detection of electrical contacts for the automotive industry
- Direct integration of the Checkbox Compact in a vibratory bowl feeder
- Checking of three part types with only one feeder



Checkbox Compact CHB-C

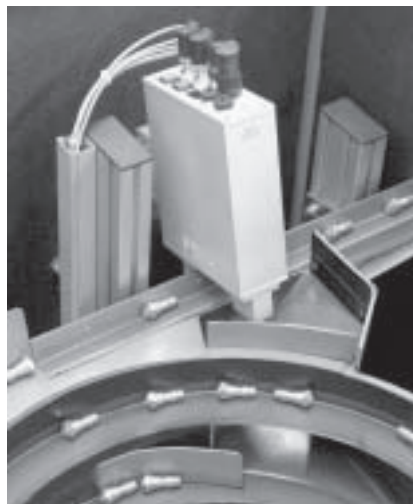
Application examples

The Checkbox Compact in application

- Orientation detection of insulating terminal inserts for the electrical industry (20 checked parts/sec)
- Direct integration of the Checkbox Compact in a centrifugal feeder



- Orientation detection and quality inspection of hollow bolts for the metalworking industry
- Assembly of the Checkbox Compact on an industrial conveyor belt
- The entire feeding system is controlled by the Checkbox Compact (control of the conveyor, valve actuation and buffer sensing)





FESTO

100 % service with 100 % partnership

Welcome to a world of service from Festo. Customer orientation is not just our everyday philosophy – it is our launch pad for the future and the route to success for both our customers and ourselves.

Global presence, always close at hand

- 52 national Festo companies in constant on-line communication
- A presence in almost 176 countries, with a total of 10,500 staff
- Worldwide networking for consistent standards of consultancy, sales and service

Personal advice

- Worldwide support provided by over 1,000 highly-qualified technical consultants

Software service

Electronic catalogue:

Database-supported general catalogue on CD-ROM in 20 languages and a wealth of advantages:

- Fast reliable product search functions
- Automatic selection of accessories
- Sizing of pneumatic circuits
- Calculation and sizing programs with direct links to search functions

Take advantage of this genuine alternative to our printed catalogue.

Festo Design Tool – provides support for designers using 2D- and 3D-drawings for CAD systems.

FluidDraw – allows fast and easy drafting of circuit diagrams, with direct import of data from the electronic catalogue.

Info service

- Full product documentation with detailed technical information
- Attractive regular customer magazines showing useful application examples and new product information
- The latest information available via the Internet at the click of a mouse from <http://www.festo.com>

Everything from a single source

- Our catalogue includes over 16,400 products
- All our components are precisely coordinated
- Drives and drive accessories
- Handling and vacuum technology
- Positioning
- Valves and valve accessories
- Valve terminals and bus systems
- Proportional technology
- Compressed air preparation
- Tubing, fittings, mounting accessories
- Sensors and pressure switches
- Pneumatic control technology
- Electronic control technology

Customer service

- Telephone advice via hotlines
- Fast on-site service
- Reliable maintenance and complaints service

Spare parts service

- Short delivery distances thanks to worldwide local spare-parts service
- Supply from fully stocked Festo warehouses
- Prompt deliveries of Festo components
- For particularly urgent cases, Festo sales offices hold stocks of a good range of almost all accessories and standard components

Delivery service

- Fast deliveries of catalogue products ex stock
- Non-standard stroke and special-design cylinder production (SMS) in 28 countries
- Fully-automated Customer Service Center (production and logistics) in St. Ingbert-Rohrbach, Germany
- Customer Service Center handles over 7,400 orders comprising 16,000 items every day
- Daily movement of 6,500 crates weighing a total of 50,000 kg
- Direct deliveries to customers throughout Europe



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All technical data subject to change according to technical update.

Compact, economical, reliable:

With the Checkbox Compact,
100% quality inspection becomes
child's play.

	Benefits for designers	Benefits for purchasers
1. Standardized system solution	■ No part-specific in-house construction necessary ■ Maximum degree of retooling flexibility ■ No programming requirement ■ Immediate availability	■ Reduced ordering procedure
2. Maximum system availability	■ Minimized downtimes thanks to contactless checking ■ Quickest possible retooling	■ No purchasing expenditure as a result of maintenance and repairs ■ Integrated quality inspection ■ A system for diverse feeding of components
3. Simplest operation and commissioning	■ Festo plug and work® thanks to Teach-in function	■ No complex logistics chains due to in-house constructions

Festo automation components

Important components in our product range

Parts sorting and testing

- Checkbox family



Compressed air preparation

- D-series service units



Control technology

- Individual valve CPE
- Valve terminal CPV
- Smart Positioning Controller SPC200
- Front End Controller IPC FEC® Standard FC640



Long linear movement

- Rodless cylinder DGPL
- Electric toothed-belt drive DGE
- Standard cylinder DNC and DSNU
- Compact cylinder ADVU



Short linear movement

- Linear module HMP
- Guided drive DFM
- Mini slide SLT
- Flat slide SLG
- Linear module HMPL
- Short-stroke cylinder ADVC



Rotary movement

- Rotary drive DRQD
- Swivel module DSM
- Swivel/linear module DSL



Gripping, mechanical ...

- Precision gripper HGPP
- Micro gripper HGWM
- Three-point gripper HGD



... or with vacuum

- Suction gripper ESG
- Vacuum generator VADMI
- Vacuum generator VN



Connecting and installing

- Basic elements
- Screw connectors
- Fittings and restrictors
- Tubing



Further products and details: <http://catalog.festo.com> or consult your Festo technical advisor.

Pneumatic Pictograms



Stroke length



Flow rate



Voltage



Force



Pressure



Temperature



Diameter



Vacuum



Width



Service



Repair service



Worldwide service



Hotline



Collection facility



Delivery time



In stock



Important



Type discontinued



New



Spare parts service