Checkbox CHB-C, Compact

FESTO

Checkbox CHB-C, Compact

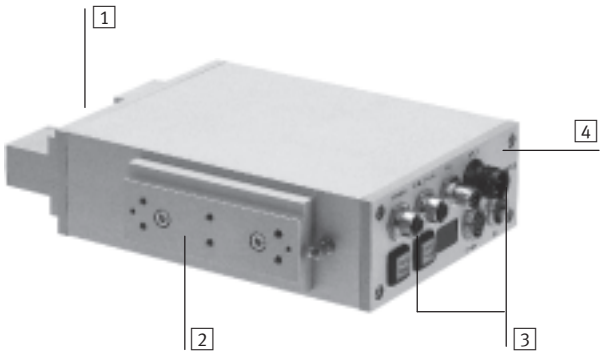
Key features

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
2 Mounting elements
- 6xM5 threaded hole
- Dowel pins
- Dovetail guide for connecting kit HMSV-12

3 Electrical connections
- Digital I/O
- Diagnostic interface
- Encoder
- Voltage supply

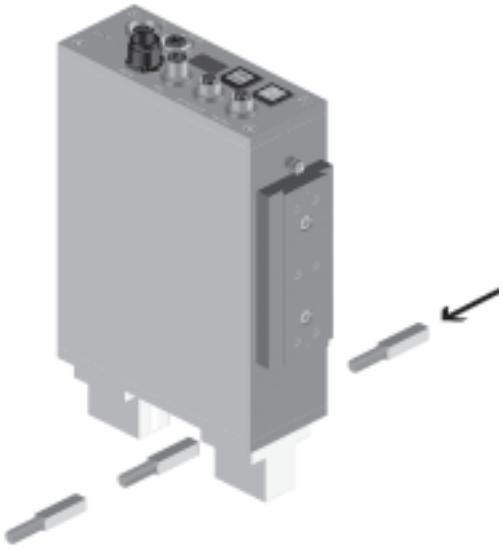
4 Front plate with the user interface
- Buttons
- Control LEDs
- Display

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.



Checkbox CHB-C, Compact

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

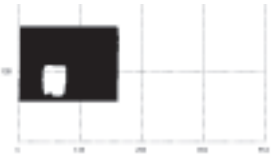
Key features

What does the camera see?

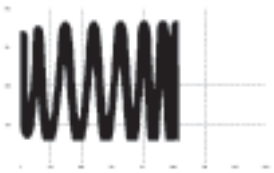
Part to be checked
Insulating terminal insert

Part to be checked
Valve spring

Camera image
Insulating terminal insert



Camera image
Valve spring

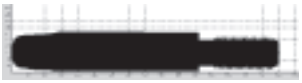


Part to be checked
Glass ampoule

Part to be checked
Glow bar

Camera image
Glass ampoule

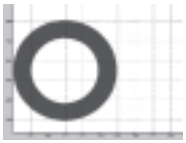
Camera image
Glow bar



Part to be checked
O-ring

Part to be checked
Aroma valve

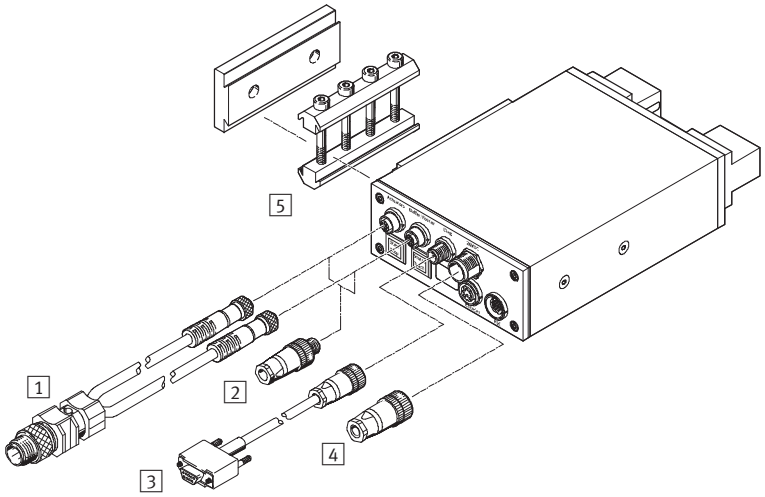
Camera image
O-ring



Camera image
Aroma valve

Checkbox CHB-C, Compact

Peripherals overview



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

Checkbox CHB-C, Compact

Technical data

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

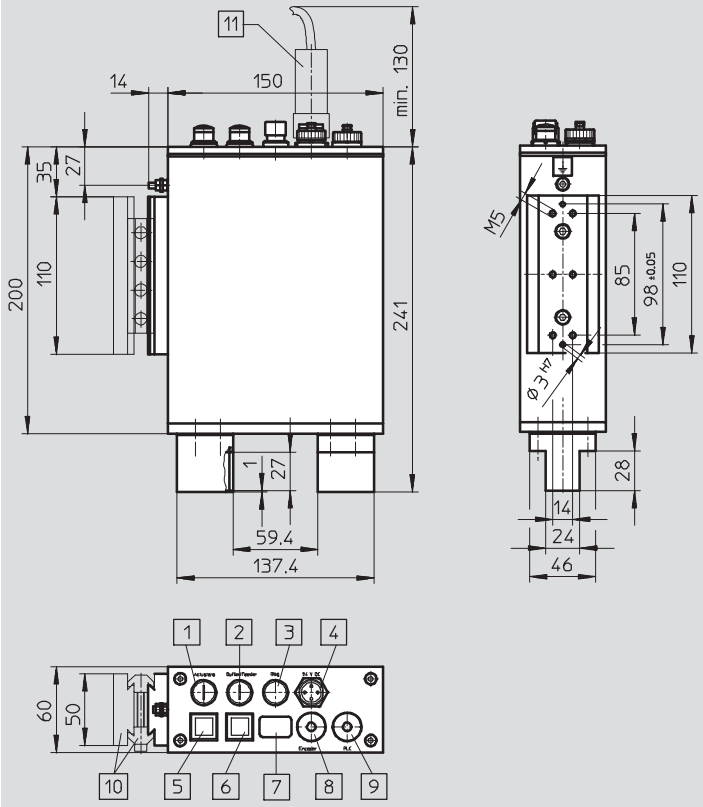
Operating and environmental conditions		
Ambient temperature	[°C]	–5 ... +50
Storage temperature	[°C]	–20 ... +70
Protection class		IP64
Installation site		Dry, screened from extreme external light sources, cleanest possible ambient air

Checkbox CHB-C, Compact

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**

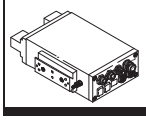


1 Actuator connection
2 Buffer/feeder connection
3 Diagnostics connection
4 24 V DC connection
5 Start/stop button
6 Status/Teach button
7 Display
8 Encoder connection
9 PLC connection
10 Connecting kit HMSV-12 (not included in scope of delivery)
11 Connector plug, 4-pin M18 socket (not included in scope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

Checkbox CHB-C, Compact

Technical data

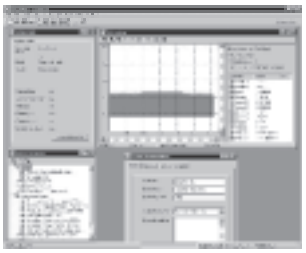
FESTO

Ordering data			
Designation		Part No.	Type
	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**

Software to meet individual requirements

CheckKon



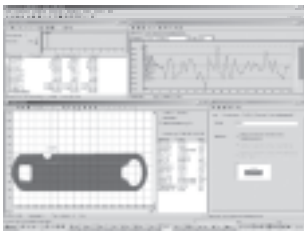
Performance characteristics

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



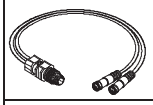
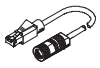
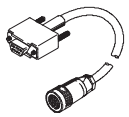
Software program

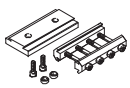
"CheckOpti" is used in cases where the standard Checkbox CHB-C learning program reaches its limits due to the fact that contour differences are too small, meaning that part orientation or quality features cannot be reliably recognised.
"CheckOpti" enables a complete analysis of the Checkbox CHB-C recognition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

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 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 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 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 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 Screw terminal	–	**18493**	**NTSD-GD-9**
				18526	**NTSD-GD-13,5**
		Angled socket, 4-pin Screw terminal		**18527**	**NTSD-WD-9**

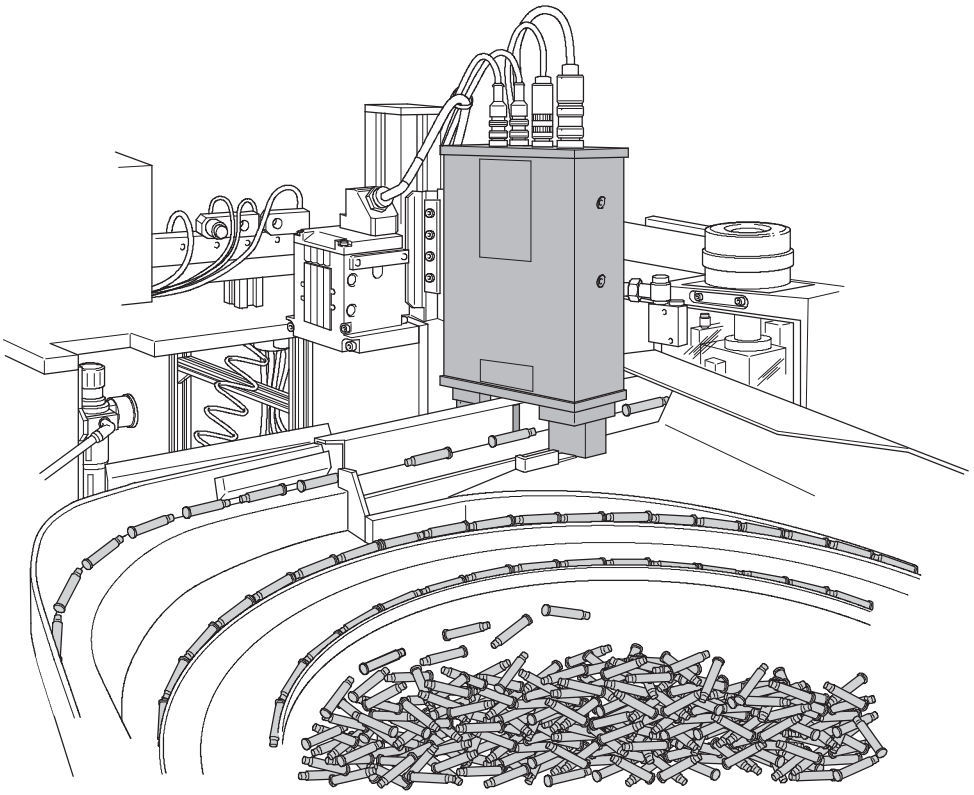
Ordering data – Accessories			
	Description	Part No.	Type
Connecting kit		Technical data ➔ Internet: hmsv-12	
	With screw-on adapter plate	**177658**	**HMSV-12**

Application examples

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