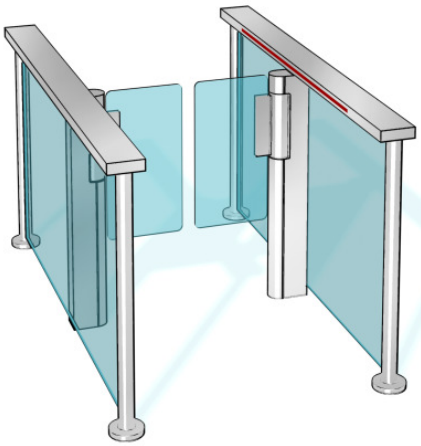
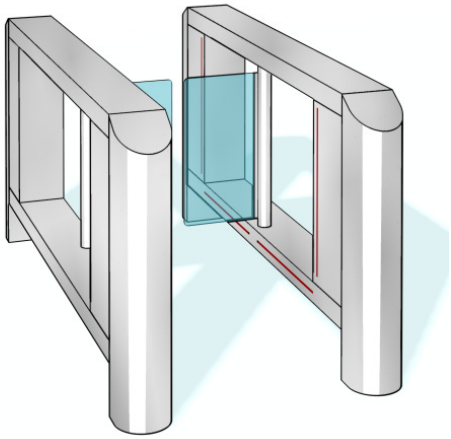
Operating Instructions

Argus HSB



HSB-E07



HSB-E04

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Original instructions

1 About this document

1.1 Validity

This manual is valid for the unit types HSB-E02, -E04, -E07, -E08, -E10, -E11 and -S05.

1.2 Target group

The target group for this document are the system operator and technical personnel.

1.3 Content and purpose

This manual describes the operation, assembly, installation and maintenance of the unit.

1.4 Supplementary documents

- Technical documentation ETS21cc / Pavis 2004, No. 30605
- Operation instructions OPL 01-05, No. 30078
- OPL 01-05, No. 30078
- Risk assessment HSB, No. 30805
- Expert inspection HSB, No. 30806
- Inspection book HSB, No. 30807
- Inventory safety at automatic door systems, No. 30657
- Conformity statement, No. 30983
- Project-specific diagrams
- Project-specific electrical wiring diagrams and circuit diagrams

1.5 Document storage

This manual is to be stored by the operator together with the supplementary documentation for the entire service life of the unit.

1.6 Abbreviations

Companies and associations

KGB **K**aba **G**allenschütz GmbH, **B**ühl

IEC **I**nternational **E**lectrotechnical **C**ommission

ICS **I**nternational **C**lassification for **S**tandards

FTA **F**achverband **T**ür**a**utomation

Product names

HSB **H**alfheight **S**ensor **B**arrier

System-specific terms

FCC Software **F**lap **C**ontrol **C**enter

FFB **F**ertig**f**uß**b**oden (Finished floor level)

RFB **R**oh**f**uß**b**oden (Unfinished floor level)

1.7 Danger categories and warning symbols

DANGER
Describes an imminent danger that leads to substantial bodily harm or that leads to death.

WARNING
Describes a possibly dangerous situation that can lead to substantial bodily harm or that can lead to death.

CAUTION
Describes a possibly dangerous situation that can lead to minor injuries.

NOTICE
Describes a possibly dangerous situation where the product itself or something near the product could be damaged.

1.8 Notes

NOTE
Application tips, useful information

► Action

⇨ Result of an action, e.g. unit response.

Examples:

► Turnstile released for single entry.

⇨ Optical signal device turns green.

► **CAUTION!** Fingers may become jammed at the closing edge! Do not touch the outer edge.

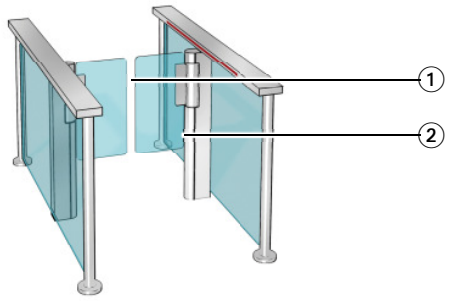
► Slide the door.

⇨ The door automatically rotates one segment.

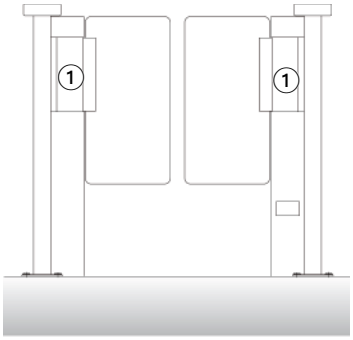
- Names of operating elements, examples:
  - Press the **OK** button.
  - Select the **Start** menu item.
  - Press the **Block** key.
- User inputs, example:
  Enter „**Kaba-User**" as the user name.
- System outputs, example:
  The „**Parameter aktualisiert**" (parameter updated) display window appears.

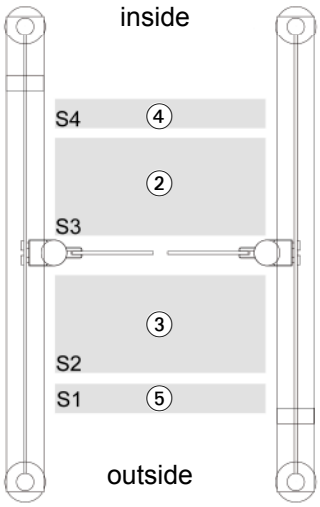
Safety information: explanation of the risk

✓ Safety information: action (instruction, prohibition)



Hazard areas





Security devices

2 Safety

2.1 Hazard areas

NOTE
Hazard areas are defined in DIN 18650 and labelled with technical terms.

Terms used in the norm are listed in the following documentation:

① Main closing edge:
wing front edge
type of danger: Bouncing

② Opposing closing edge:
fixed closing edge opposite to the main closing edge
type of danger: Pinching

2.2 Security devices

① Low-energy drive

② S3 separation sensor monitoring door flap (inside)

③ S2 separation sensor monitoring door flap (outside)

Low energy drive

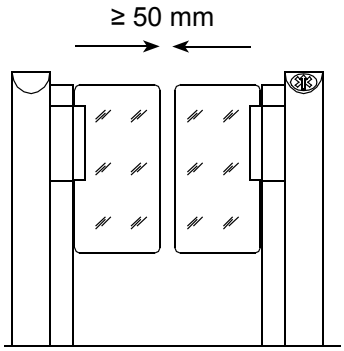
Door leafs are actuated by a low energy drive according to DIN 18650:

- Force during opening or closing not more than 67 N
- Kinetic energy not more than 1.6 J
- Opening time closed - 80° and closing time 90° - 10°: min. 3 seconds
- Closing time 10° - fully closed min. 1.5 seconds

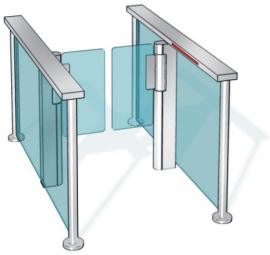
2.3 Safety devices

④ S4 safety sensor (inside)
for person detection (option)

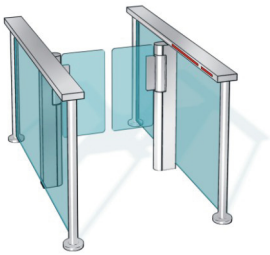
⑤ S1 safety sensor (outside)
for person detection (option)



Safety distance between closed door leaves



Safety level 0



Safety level 1

Separation distances (according to DIN 18650)

Fingers: ≤ 8 mm or ≥ 25 mm

Safety distance between closed door leaves

There is no risk of fingers being pinched when the door leaves close, as the separation distance between the door leaves is ≥ 50 mm.

Spacing between control element and sensor zone

Optimum spacing between the control element and the sensor zone > 300 mm.

A person must be stopped in front of the first sensor. The sensor beam must not be occupied during the booking procedure, otherwise a false alarm is triggered.

Safety levels

In principal, the units can be classified into three safety levels. The security and safety devices can then be selected based on these categories.

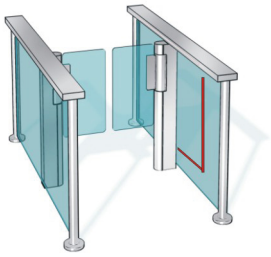
The safety level has to be identified in the risk assessment, see *section 2.5.1 Risk assessment.*

Safety level 0 -
basic single passage regulation

- Suitable for non-public areas and trained users.
- Walk through area monitored by separation sensor S2 and S3.
- Simple level of monitoring of individual passage in both directions by eight single light barriers.

Safety level 1 -
enhanced single passage regulation

- Suitable for non-public areas and trained users.
- Walk through area monitored by separation sensor S2 and S3 and safety sensor S1 and S4.
- Simple level of monitoring of individual passage in both directions by eight single light barriers.
- Single passage regulation by safety sensor S1 and S4.



Safety level 2

**Safety level 2 -
enhanced single passage regulation**

- Suitable for public areas.
- Walk through area monitored by separation sensor S2 and S3 and safety sensor S1 and S4 in an optimised arrangement.
- Increased level of monitoring of individual passage in both directions durch eine horizontale Sensorleiste.
- Single passage regulation by a vertical sensor strip.

Notes on the use of sensors

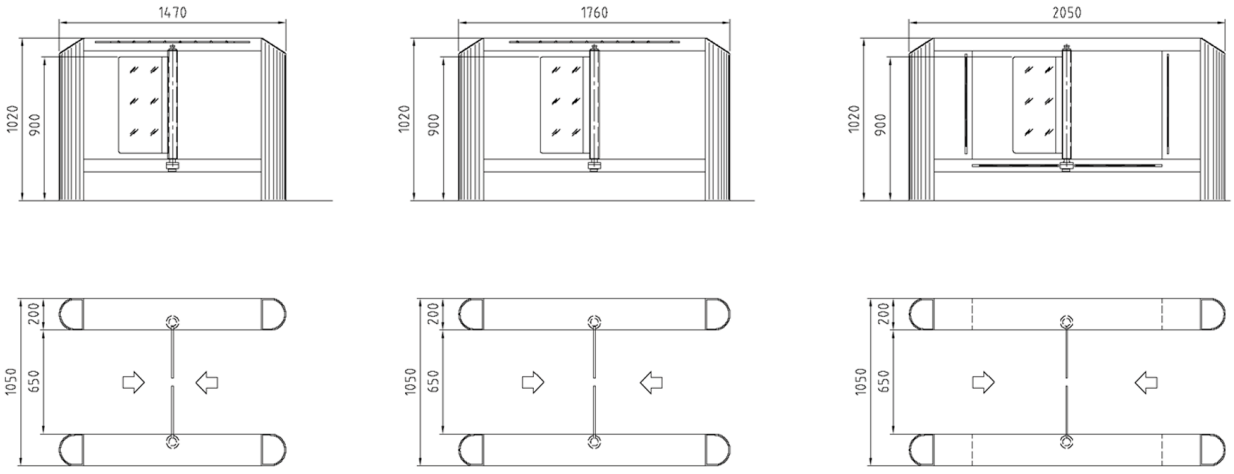
Sensors in the hand rail, arranged horizontally

- With the protective sensor 1 and safety sensor 2 arranged 950 mm above floor level, most persons will be detected.
- Persons (children) < 950 mm in height will not be detected.
- Trolleys and luggages can be detected as a additional object (fals alarm possible).
- In case of a distance between two persons < 320 mm it may happen that two persons are detected as one person.

Sensors arranged vertically and horizontally

- With the separation sensor 3 and safety sensor 4 arranged at door height all persons and baggages will be detected as a single object.
- The separation sensors monitor the movement of the door leaves during opening and closing. Details see ch*ap. 5.2.9 Monitoring movement of door leaves*
- The horizontal sensor strip has the function of a sneak-by guard.

NOTE
The sensors are set and tested in the factory. The operator does not need to implement any settings with the exception of Calibrating the sensors.



Safety level 0 Safety level 1 Safety level 2

2.4 Safety instructions

Risk of death by electrocution

If the unit is not connected properly, electrocution which may result in death is possible (power supply = 230 VAC).

✓ Connect the unit properly and in compliance with the country-specific standards and guidelines.

✓ Only have repairs and maintenance carried out by technical personnel.

✓ Observe the accident prevention regulations and the recognised safety regulations, see e.g. DIN 18650.

Risk of death if escape route equipment is inadequate

There is a risk of death if emergency route equipment is inadequate for units situated in emergency routes for safe release of the emergency route.

✓ Equip unit with an emergency-off button or an emergency route switch on the unit or controlled by the central system in conjunction with, e.g. a smoke detector.

✓ Have units situated in emergency routes approved in accordance with international and regional requirements and/or label them accordingly.

✓ Approval by the building supervisory board may be required in individual cases. They check if the requirements of the emergency concept specified for the building or the construction stage are met.

Control unit for outage in case of escape and rescue

Risk of injury if safety equipment is inadequate

If protective equipment is inadequate, it is possible for people to become stuck in the door or to run into the door leaf.
The risk of injury on the door is primarily dependent on two factors:

- User group
(e.g. age, health, instruction on unit use)
- Safety equipment / sensor system
(with or without contact)

✓ Prior to placing an order, a project-related risk assessment must be created and the required sensor system designed on this basis.
For details, see section *2.4.1 Risk assessment*

Risk of injury through changes to the unit

☝ New risks that have not yet been considered may occur when changes are made to the unit.

✓ Changes to hardware and software or to the mechanical components may only be carried out in consultation with KGB.

Risk of injury after change in use

☝ If there is a change in use or changes are made to the unit's environment, new risks that have not yet been considered may occur.

✓ Create another project-related risk assessment and determine the required safety equipment/ sensor system on this basis.
For details, see section *2.4.1 Risk assessment*

Risk of injury if unit settings are incorrect

☝ Injury possible, e.g. from running into the doors or getting stuck, if the unit settings are not correct.

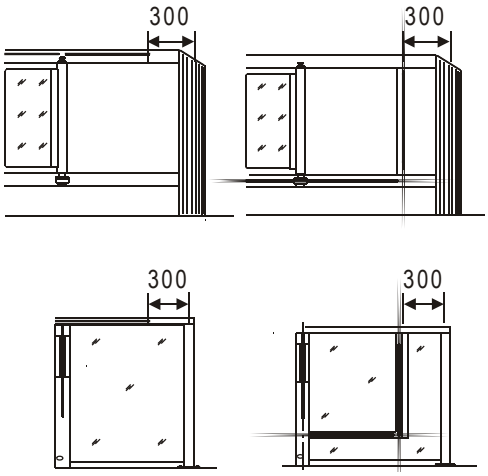
✓ The settings must be performed properly and in compliance with the applicable regulations.

✓ Only have repairs and maintenance carried out by technical personnel.

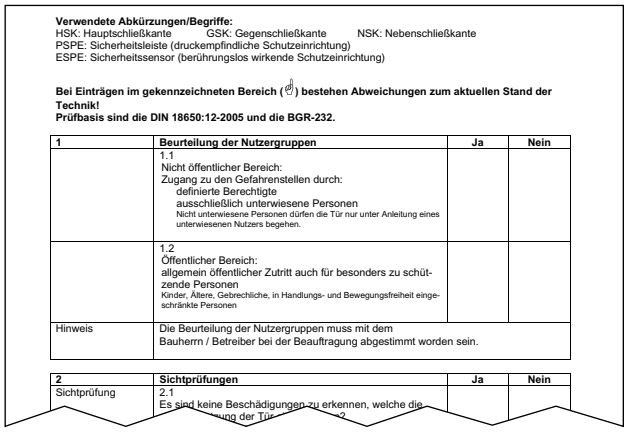
Malfunction of the unit in case of a wrong card reader position

☝ A wrong placed card reader can trigger a false alarm while booking.

✓ The card reader must be fixed min. 300 mm in front of the first sensor.



Card reader position



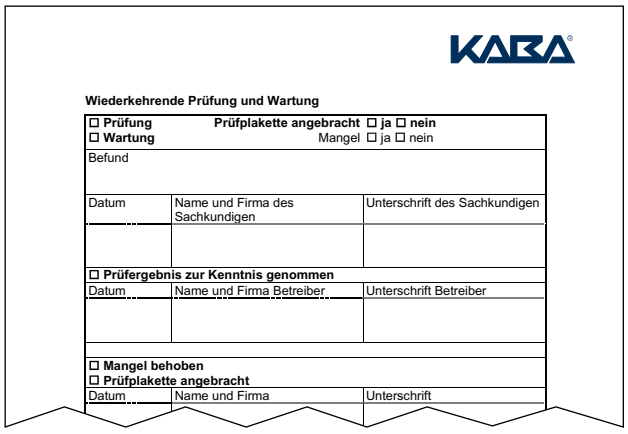
Verwendete Abkürzungen/Begriffe:
HSK: Hauptschließkante GSK: Gegenschließkante NSK: Nebenschließkante
PSPE: Sicherheitsleiste (druckempfindliche Schutzeinrichtung)
ESPE: Sicherheitssensor (berührungslos wirkende Schutzeinrichtung)

Bei Einträgen im gekennzeichneten Bereich (☝) bestehen Abweichungen zum aktuellen Stand der Technik!
Prüfbasis sind die DIN 18650:12-2005 und die BGR-232.

1	Beurteilung der Nutzergruppen	Ja	Nein
	1.1 Nicht öffentlicher Bereich: Zugang zu den Gefahrenstellen durch: definierte Berechtigte ausschließlich unterwiesene Personen Nicht unterwiesene Personen dürfen die Tür nur unter Anleitung eines unterwiesenen Nutzers begehen.		
	1.2 Öffentlicher Bereich: allgemein öffentlicher Zutritt auch für besonders zu schützende Personen Kinder, Ältere, Gebrechliche, in Handlungs- und Bewegungsfreiheit eingeschränkte Personen		
Hinweis	Die Beurteilung der Nutzergruppen muss mit dem Bauherrn / Betreiber bei der Beauftragung abgestimmt worden sein.		

2	Sichtprüfungen	Ja	Nein
Sichtprüfung	2.1 Es sind keine Beschädigungen zu erkennen, welche die [illegible] der Tür [illegible]

Excerpt of an expert inspection checklist



Wiederkehrende Prüfung und Wartung

☐ **Prüfung** ☐ **Wartung**	**Prüfplakette angebracht** ☐ **ja** ☐ **nein** Mangel ☐ ja ☐ nein	
Befund		
Datum	Name und Firma des Sachkundigen	Unterschrift des Sachkundigen
☐ **Prüfergebnis zur Kenntnis genommen**		
Datum	Name und Firma Betreiber	Unterschrift Betreiber
☐ **Mangel behoben** ☐ **Prüfplakette angebracht**		
Datum	Name und Firma	Unterschrift

Excerpt of a test book

2.5 Testing the protective equipment

2.5.1 Risk assessment

For each project, the operator has to conduct a project-related risk assessment or have one conducted prior to ordering the unit.
For details about risk assessment, see section *1.4 Supplementary documents.*

2.5.2 Expert inspection and test book

An annual expert inspection must be carried out within the scope of the ASR 11/1-5 and the DIN 18650. We recommend having it carried out as part of the technical maintenance. The country-specific standards and guidelines are to be observed outside of the scope of application described.

The initial expert inspection, the so called first inspection, is carried out during maintenance. The result and all other inspections are documented in the test book.

Required documents

- Expert inspection checklist for HSB, No. 30806
- Test book for HSB, No. 30807

An expert inspection is carried out as follows:

► Check the unit in accordance with the expert inspection checklist.

► Enter findings in the expert inspection checklist.

► Fill out the “Recurring inspection and maintenance” table in the test book.
Observe the following during the first inspection: fill out the „First inspection prior to initial operation“ table during the initial inspection.

Observe the following during the expert inspection

- The inspector fills out an expert inspection checklist for each inspection and signs it.
- The operator also signs the expert inspection checklist.
  The signed expert inspection checklist serves as a record for the installation company.
- The operator makes a copy of the signed expert inspection checklist.

NOTE
The expert inspection checklist has to be stored for at least one year (in accordance with DIN 18650 -2, No. 5.1.3).

Observe the following for the documentation of the expert inspection

- Only for the first inspection: Fill out the “Initial inspection before commissioning” table.
- The service technician documents the results of the expert inspection in the test book.
- The operator also has to sign the test book.
- The test book serves as a record for expert inspections and maintenance.
  The expert inspection can be carried out as part of the maintenance.
- The operator has to store the test book for the entire service life of the unit.
- Government authorities have to be able to view the test book at any time.

Identifying defects or deviations from the state of the art

If defects or deviations from the state of the art are found during the expert inspection,
the following measures are to be carried out:

- The service company asks the operator to fix the defects or deviations.
- The operator requests an appropriate offer from the Kaba partner responsible.

Expert inspections may only be carried out by “experts”.

Definition of an expert

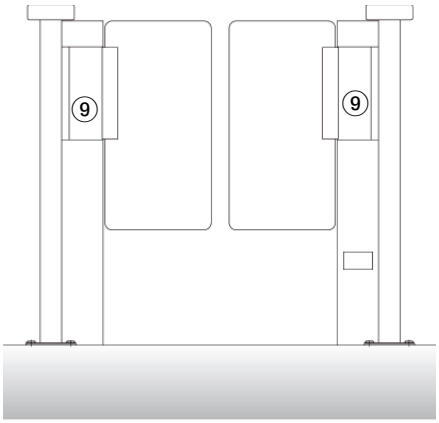
An expert is someone who, on the basis of his training and experience:

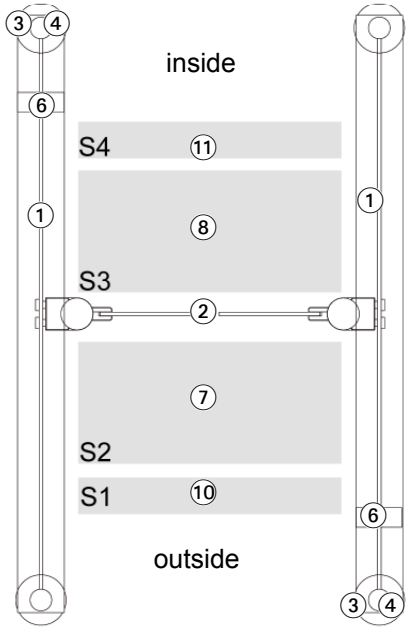
- knows about the safe operation of automatic door systems and
- knows about national and international regulations for personal security and
- constantly refreshes or updates this knowledge to meet the currently available technology.

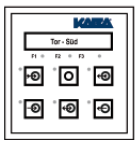
Experts have to be objective in their assessment of the operating safety of the door unit.

Training as an expert inspector

A training to become an expert inspector should be carried out in line with the guidelines of the Association for Door Automation (FTA - Fachverband Türautomation), Part B. The course must be attended and passed with a final written exam. This course can be completed at KGB or at another training facility recognised by the FTA.







3 Product description

3.1 Important information on the product

3.1.1 Overall view

① Guide elements

② Door leaf

③ Pass reader (option)

④ Button (option)

⑤ Operating panel OPL (option)

⑥ Optical signal device (red/green) (option)

Protective devices

⑦ S2 separation sensor monitoring door flap (outside)

⑧ S3 separation sensor monitoring door flap (inside)

⑨ Low-energy drive

Safety devices

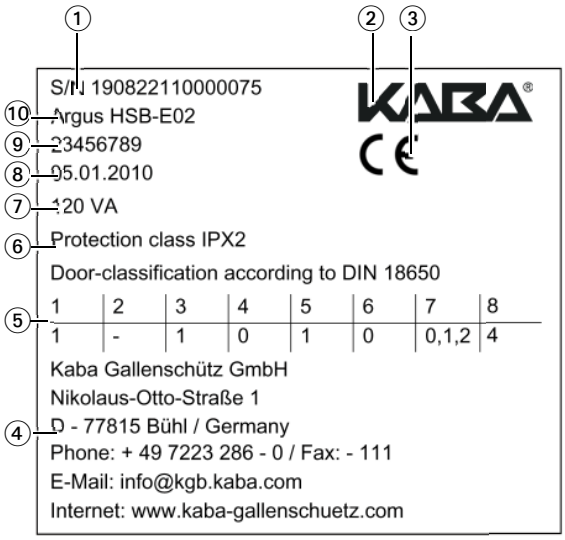
⑩ S1 safety sensor (outside) for person recognition (option)

⑪ S4 safety sensor (outside) for person recognition (option)

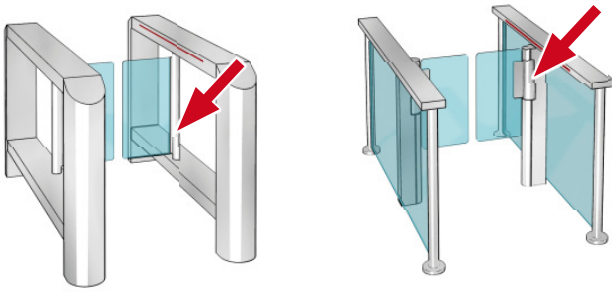
3.1.2 Intended purpose

Argus HSB systems from KGB are used to separate spatial zones. Depending on the system, instruction may be required.

The basic functions of the Argus HSB, and its input and output channels, can be adapted to the requirements of individual customers by means of parameterisation. For additional comfort and more safety in the field of property protection, additional components can be connected.



Identification plate



Affixation identification plate

3.1.3 Liability

Modifications to the hard- and software and to the mechanical components are only allowed in consultation with KGB.

KGB shall not be held liable for damage caused by subsequent modifications. The operator is liable in this case.

3.1.4 Labelling of the product

On each unit an identification plate is affixed.

If it was not attached by the manufacturer, the assembling technician affixes it after installation.

NOTE
Various labels are affixed to the unit as a whole and to certain components, for example drive or control unit. The labels must not be removed or damaged.

Identification plate

① Serial number

② Manufacturer‘s logo

③ CE marking

④ Complete address of manufacturer

⑤ Classification according to DIN 18650

⑥ Protection class

⑦ Connection data

⑧ Date of manufacture

⑨ Customer order number

⑩ Product name

The identification plate is affixed to three different places:

- Packing list
- Shipping papers
- Unit: at the bottom of the conduit of drive, behind.

NOTE
In case of several units, each unit has a consecutive serial number.

3.2 Technical Data

Types of unit	HSB-E10	Safety level 0 System with two sensor zones (separation sensors) for simple separation in a horizontal arrangement in the hand rail
	HSB-E02, -E07	Safety level 1 System with four sensor zones (separation sensors and safety sensors) for simple separation in a horizontal arrangement in the hand rail
	HSB-E04, -E08	Safety level 2 System with four sensor zones (separation sensors and safety sensors) for improved separation in a horizontal and vertical arrangement in the hand rail
Drive	Low energy drive M05	
max. kinetic energy	< 1,6 J	
max. force	67 N (at the outer edge of the door leaf)	
Drive torque	approx. 5 Nm	
Locking	tooth clutch RA12	
Locking torque	min. 120 Nm	
Frequency of passage	30 persons / min	
Design of drive	max. 3 mio. switching cycles per year	
Service life of drive MCBF	min. 3 Mio. switching cycles	
Opening angle	- 90° - + 90°	
Control	ETS21	
Software	Flap Control Center	
Power supply	100 - 230 V AC / 50 - 60 Hz	
Connected load	120 VA	
Control unit voltage	24 V DC	
Interfaces	• serial interface RS 232 to computer • internal: CAN bus for internal connection of the control boards • external: up to eight units can be connected • five potential-free feedbacks per ETS21 • further feedbacks are possible via additional ETS21io	

IP protection class	HSB-E02, -E04	• Housing: IP 43 • Motor, sensor, locking: IP 43 • Power supply leading components for PLC: IP 43
	HSB-E07, -E08	• Housing: IP 32 • Motor, sensor, locking: IP 42 • Power supply leading components for PLC: IP 42
Dimensions **L x W x H (in mm)**	HSB-E02	• 1760 x 1050 x 1020 • Upper edge of door leaf: 900
	HSB-E04	• 2050 x 1050 x 1020 • Upper edge of door leaf: 900
	HSB-E07	• 1660 x 1070 x 945 • Upper edge of door leaf: 900
	HSB-E08	• 2010 x 1070 x 945 • Upper edge of door leaf: 900
Weight **(in kg)**	HSB-E02	130
	HSB-E04	150
	HSB-E07	160
	HSB-E08	200
Passage width	650 mm, an extension of the passage width to 900 mm for barrier-free access and materials handling is possible	

3.3 Classification according to DIN 18650

1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	-	1	0	3	0	1, 2, 4	4

Key for the classification according to DIN 18650		
1	**Drive type**	1 = swing door drive
3	**Durability of the drive**	Designed for < 1 million cycles/annum, this is considerably more than the highest category defined in the standard.
3	**Door leaf design**	1 = swing door
0	**Suitability as a fire protection door**	0 = not suitable
5	**Safety equipment on the drive**	3 = low-energy drive
6	**Special drive require-ments**	0 = no special requirements
7	**Safety on the door leaf**	1 = with adequately measured safety distances 2 = with protection against getting fingers jammed 4 = with presence sensor
8	**Ambient temperature**	4 = +5 °C à +40 °C (temperature range according to manufacturer's specification)

3.4 Climate class of the unit in accordance with ICS

The climate classification in accordance with ICS is carried out on the basis of the IEC 721-3-3.

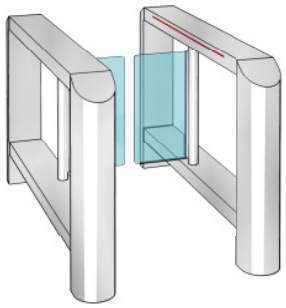
The following ambient conditions apply for operation of the installed device inside in a fixed location protected from weather conditions.

ICS-Code: 3K3/3Z2/3Z4/3Z7/3B2/3C2/3S3/3M3

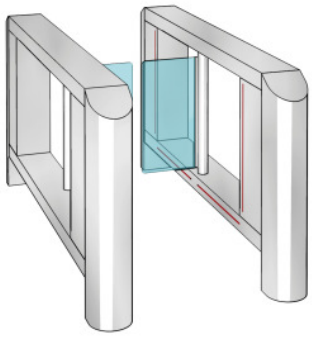
Key for the ICS code

3K3	Control of temperature humidity. Condensation must be excluded. Temperature range: +5 °C à +40 °C
3Z2	Heat radiation (e.g. heater)
3Z4	wind 5 m/s
3Z7	Dripping water
3B2	Mildew and fungus growth, rodents and other pests (exception: termites)
3C2	Pollutants like in urban atmospheres
3S3	Not close to sand and dust sources, urban atmospheres
3M3	Marginal vibrations and shocks (comparable with banging a door)

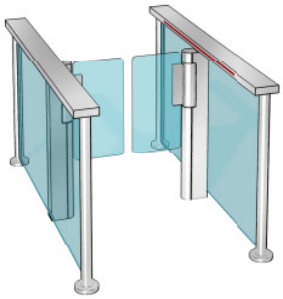
NOTE
KGB must be consulted if the unit is to be deployed in other conditions, such as e.g. high humidity, aggressive air (e.g. saliferous) extreme temperatures or dirt.



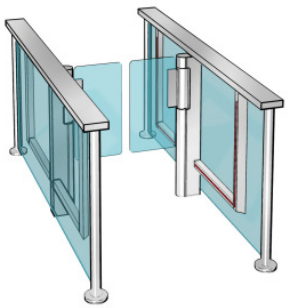
HSB-E02



HSB-E04



HSB-E07



HSB-E08

3.5 Equipment versions

all types

- door leaves polycarbonate
- possible as single or multiple units
- for indoor installation, not outdoor

HSB-E02

- Safety level 1, safety level 0 in case of extension of the passage width to 900 mm
- housing and base columns stainless steel

HSB-E04

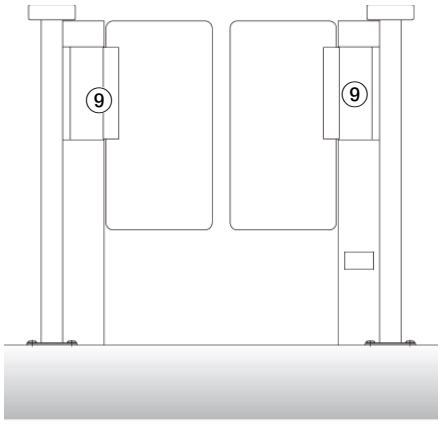
- Safety level 2
- housing and base columns stainless steel

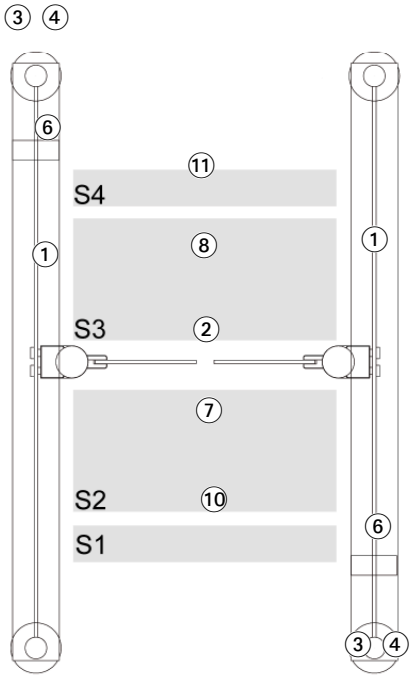
HSB-E07

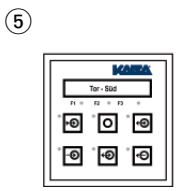
- Safety level 1, safety level 0 in case of extension of the passage width to 900 mm
- guiding elements stainless steel tube with glazing
- housing for drive and hand rail stainless steel

HSB-E08

- Safety level 2
- guiding elements stainless steel tube with glazing
- housing for drive and hand rail stainless steel







4 Construction

Position and function of the most important components

① Guide elements

② Door leaf

③ Pass reader (option):
Release via pass

④ Button (option):
Release via button

⑤ Operating panel OPL (option):
Setting of operation modes

⑥ Signal device (red/green) (option):
optical signalling annunciator

Protective devices

⑦ S2 separation sensor monitoring door flap (outside)

⑧ S3 separation sensor monitoring door flap (inside)

⑨ Low-energy drive

Safety devices

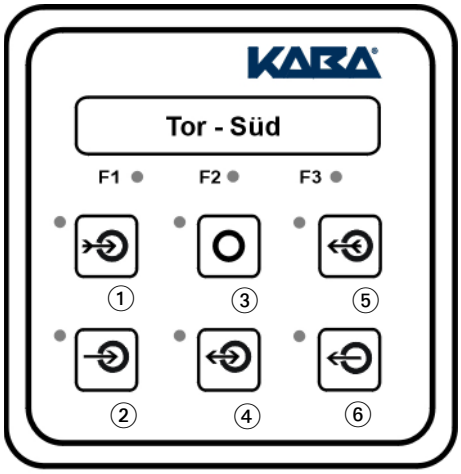
⑩ S1 safety sensor (outside) for person recognition (option)

⑪ S4 safety sensor (outside) for person recognition (option)

4.1 Separation sensors

- Two-part light curtain segment chain for connection to evaluation devices
- Range 600 to 900 mm

NOTE
The sensors are set and tested in the factory. The operator does not need to implement any settings.



OPL05

4.2 OPL control unit

① Key for continuous release, incoming*

② Key for single release, incoming

③ Block key

④ Release key

⑤ Key for continuous release, outgoing*

⑥ Key for single release, outgoing

* Depending on the unit settings, this key may also trigger permanent opening.

The keyboard of the OPL05 control unit may be set differently from the standard.

For information on the allocation of the symbols on the keys to their functions, see section *5.1 Operating modes overview*.

The system may be controlled using the card reader, keys, sensors or the OPL05 control unit.

4.3 Signal device (optional)

Three modes of signal device are supported:

Basic position all off (Standard)

- In day mode, the signal device is off where there is no release.
- In the event of a release, the signal device shows green in the direction of passage and red in the opposite direction.
- Green is cancelled depending on the priority setting (throughout or identification).
- In the event of a continuous release, the signal device shows green in the direction of the continuous release; for individual releases in the opposite direction the signal device turns red for the duration of the passage.

Basic position green

- In day mode, the signal device shows green where there is no release.
- In the event of a release, the signal device shows green.
- In the event of a continuous release, the signal device shows green in the direction of the continuous release; for individual releases in the opposite direction the signal device turns red for the duration of the passage.
- The signal device shows red in the opposite direction to the continuous release.

Basic position red

- In day mode, the signal device shows red where there is no release.
- In the event of a release, the signal device changes to green.
- In the event of a continuous release, the signal device shows green in the direction of the continuous release; for individual releases in the opposite direction the signal device turns red for the duration of the passage.
- The signal device shows red in the opposite direction to the continuous release.

4.4 Card reader (optional)

Two possible versions:

- wall-mounted
- concealed installation

5 Functions

5.1 Operating modes overview

The operating modes can be divided into basic functions and may be triggered by various systems such as:

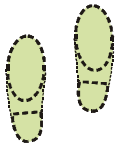
- Control element or key
- OPL05 control unit
- Sensors

Allocation of symbols to functions
e.g. the symbols on the keyboard of the OPL05 control unit and their basic functions

Symbol	Function
	Block: Door leaves immediately block (passage barred).
	General release: Door leaves can be turned by hand.
	Continuous release entry: Controlled by sensors, door leaves open in incoming direction*.
	Continuous release exit: Controlled by sensors, door leaves open in outgoing direction*.
	Single release entry: Door leaves open for one passage only, in incoming direction.
	Single release exit: Door leaves open for one passage only, in outgoing direction.

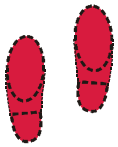
* Depending on the unit settings, this key may also trigger **permanently opening**.

authorised person in this location

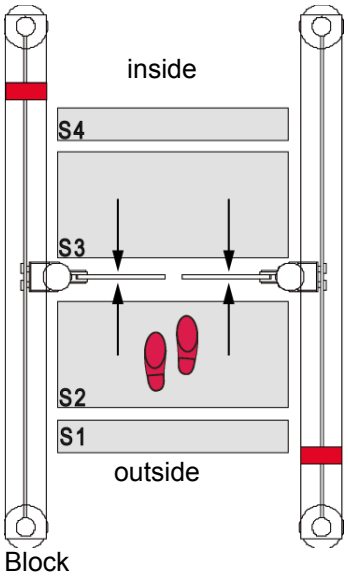


authorised person has left this location

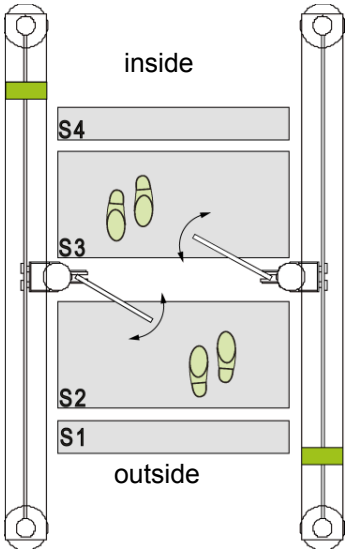
unauthorised person in this location



unauthorised person has left this location



Block



General release

5.2 Operating modes and functions

The symbols are used in the figures to represent the position of persons during the operational steps.

As an example a single unit with standard setting is used to show the functions.

The following sections describe the functions with the basic position all off mode (standard) for the optional set of signal device. For more information on the modes of the signal device, see section *4.1.3 Optical signal device (optional*).

Select the internet adress
http://www.kaba.com/physical-access-systems/en/News-Media/93136-93112/flash-animation-argus-hsb.html
and start the flash animation **Functions HSB** in your browser.

5.2.1 Basic settings

All settings can be programmed.

Standard setting:

- Night mode (standard), i.e. following release, door leaves open for one passage
- Signal device basic position all off

The basic functions detailed in the following sections can be set, e.g. with the aid of the OPL05 control unit.
see section *5.1 Operating modes overview*

5.2.2 Block

► Select **block** function.

⇨ Door leaves move to basic position and are blocked. In this position, further movement is not possible.

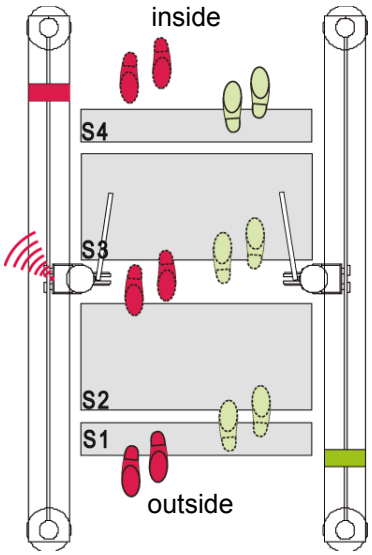
⇨ Optical signal device: outside red, inside red

5.2.3 General release

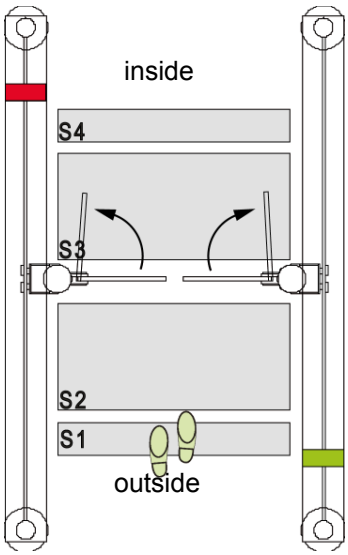
Prerequisite: **block** function is not active.

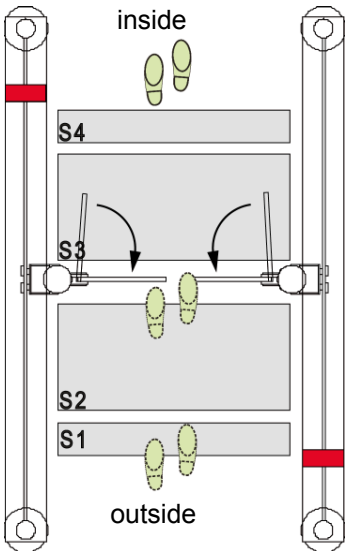
► Select the **general release** function.

⇨ Door leaves can manually be opened towards the outside or the inside.



Continuous release entry





Single release entry

⇨ Optical signal device: outside green, inside green.

5.2.4 Continuous release entry/exit

NOTE
The following section explains the procedure for selecting the **continuous release entry** function. When the **continuous release entry** function is selected, the process is carried out in the opposite direction.

Prerequisites:

- Door leaves are in basic position.
- The optical signal device is outside and inside off.

► Select the **continuous release entry** function.

⇨ The door leaves open inwards when the sensor outside is activated.

⇨ An alarm sounds when there is a passage from inside to outside.

⇨ Optical signal device: outside green, inside off, in case of sensor activation red.

5.2.5 Single release entry/exit

NOTE
The following section explains the procedure for selecting the **single release entry** function. When the **single release entry** is selected, the process is carried out in the opposite direction.

Prerequisites:

- Door leaves are in basic position.
- The optical signal device is outside and inside off.

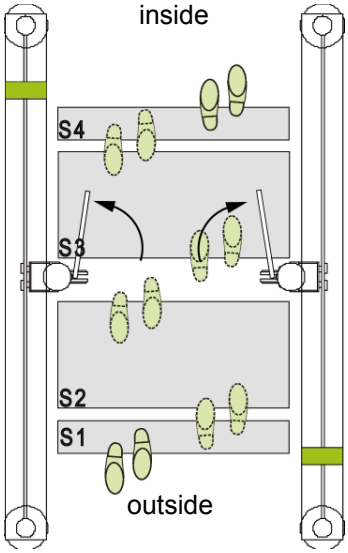
► Select **single release entry** function.

⇨ The sensor is activated (run mode via sensor).

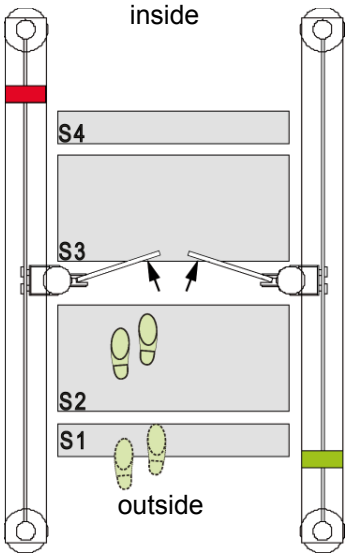
⇨ The door leaves open inwards.

⇨ Optical signal device: inside red, outside green.

⇨ A passage is possible in incoming direction.



Permanently open



Preference

The passage is concluded.

⇨ The sensor is deactivated.

⇨ The door leaves close.

⇨ Optical signal device: inside off, outside off.

5.2.6 Permanently open entry/exit

Prerequisites:

- Door leaves are in basic position.
- The optical signal device is outside and inside off.

► Select the **permanently open entry** function.

⇨ Door leaves open and remain open.

⇨ Signal device: inside off, outside green.

⇨ A passage is possible in both directions.

5.2.7 Preference entry/exit

Prerequisites:

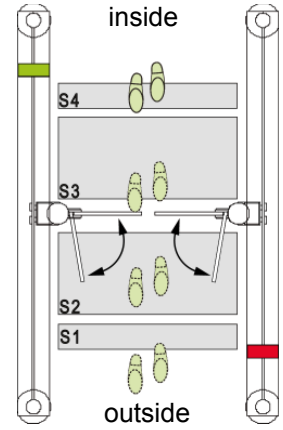
- Door leaves are in basic position.
- The optical signal device is outside and inside off.

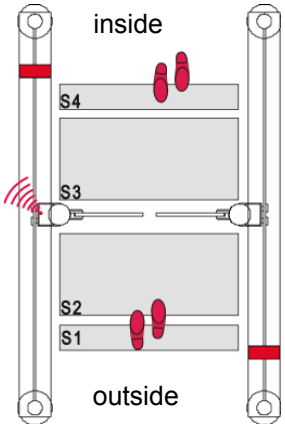
► Select the **preference entry** function.

⇨ The door leaves open in line with parameters.

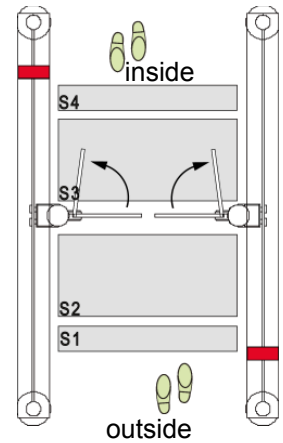
⇨ Optical signal device: inside red, outside green.

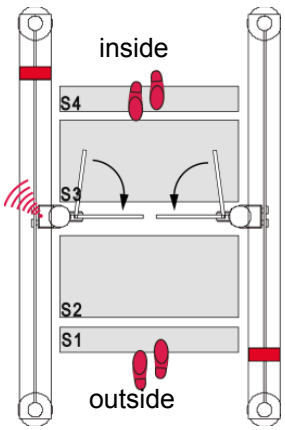
⇨ A passage is possible in an incoming direction following individual release. A passage in the opposite direction is not possible.





Night mode





Day mode

5.2.8 Day and night mode

5.2.8.1 Night mode (standard)

The door leaves are closed as standard.

► Select the **night mode** function.

⇨ The door leaves remain closed.

► Select the **single release exit** function.

⇨ Optical signal device: inside green, outside red.

⇨ The sensor is activated (run mode via sensor).

⇨ The door leaves open outwards.

► Pass through the passage in outgoing direction.

⇨ The door leaves close.

Unauthorised attempt at passage

The door leaves are closed as standard.

► Select the **night mode** function.

⇨ The door leaves remain closed.

► An unauthorised person activates the sensor.

⇨ An alarm is triggered.

5.2.8.2 Day mode

The door leaves are closed as standard.

► Select the **day mode** function.

⇨ The door leaves open inwards and remain open.

⇨ Optical signal device: outside red, inside red.

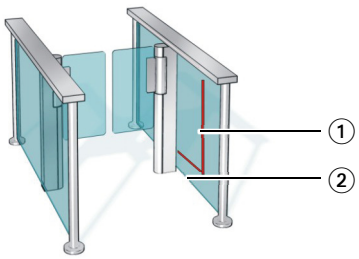
► Following a release, authorised persons may pass from outside to inside and from inside to outside.

Unauthorised attempt at passage

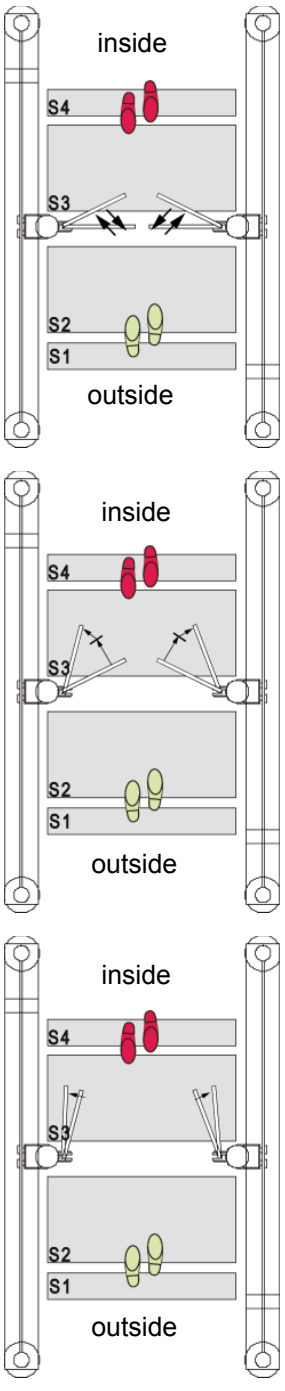
The door leaves are closed as standard.

► Select the **day mode** function.

⇨ The door leaves open inwards and remain open.



Security and safety sensor



Monitoring during opening

► An unauthorised person activates the sensor.

⇨ The door leaves close if sensors S2 + S3 are not allocated.

⇨ Signal device: outside red, inside red.

⇨ Alarm is triggered.

5.2.9 Monitoring movement of door leaves

① Separation sensor

② Safety sensor

The S2 and S3 sensors are used to monitor the area of the door leaves. Depending on the position of the separation sensors 1 and safety sensors 2, not only people but also children or luggage can be detected as a single object.

5.2.9.1 Monitoring during opening of the door leaves

Door leaves open; range 0° - 15°

► The door leaves open.

⇨ The protective sensor S3 is activated.

⇨ The door leaves close again.

Door leaves open; range 15° - 75°

► The door leaves open.

⇨ The protective sensor S3 is activated.

⇨ The door leaves block.

► The protective sensor S3 is de-activated.

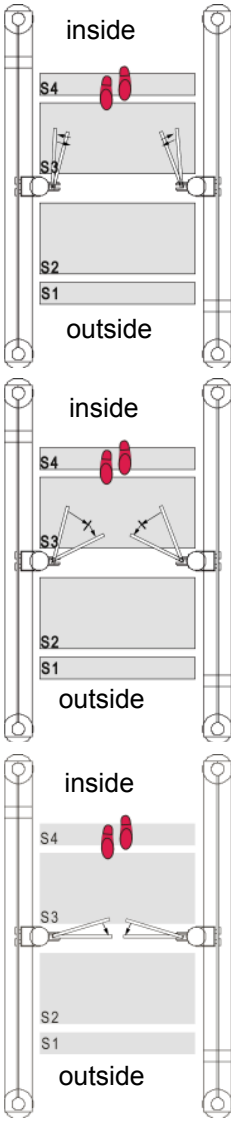
⇨ The door leaves open fully.

Door leaves open; range 75° - 90°

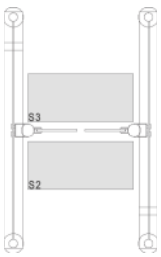
► The door leaves open.

⇨ The protective sensor S3 is activated.

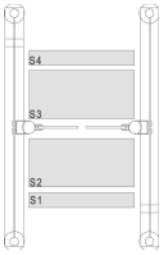
⇨ The door leaves open fully.



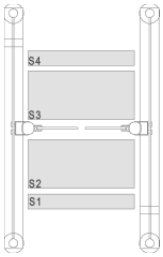
Monitoring during closing



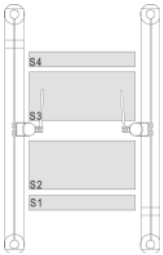
Unit with separation sensors



Unit with security and safety sensors



Night mode



Day mode

5.2.9.2 Monitoring during closing of the door leaves

Door leaves close; range 90° - 75°

► The door leaves close.

⇨ The protective sensor S3 is activated.

⇨ The door leaves open again.

Door leaves close; range 75° - 15°

► The door leaves close.

⇨ The protective sensor S3 is activated.

⇨ The door leaves block.

► The protective sensor S3 is de-activated.

⇨ The door leaves close fully.

Door leaves close; range 15° - 0°

► The door leaves close.

⇨ The protective sensor S3 is activated.

⇨ The door leaves close fully.

5.2.10 Functional sequence matrix

Notes on the matrix

The following matrix gives illustrative examples of the system's reactions to various situations. For this purpose the mode **priority separation** (menu mode **configuration**) is selected in the software.

The matrix is subdivided into

- units with separation sensors and
- units with security and safety sensors

An additional division results in

- night mode (door leaves in basic position closed) and
- day mode (door leaves in basic position open)

Explanation of the matrix of functions using an example:

Function	Sensors							
	S1	S2	S3	S4				
		>						

- The **continuous release entry** function is selected.
- A person approaches from outside and has activated sensor S2.

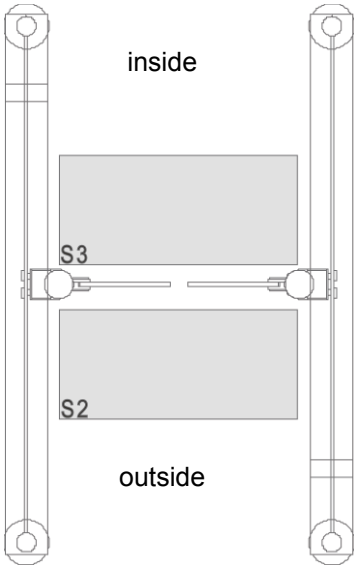
Signal			Door	Comment
Outside	Inside	Alarm		
Green	Red		-- --	Sensor-controlled opening

Unit response:

⇨ The optical signal device outside shows green, the optical signal device inside shows red.

⇨ No alarm is triggered.

⇨ The door leaves open, controlled by the sensors.

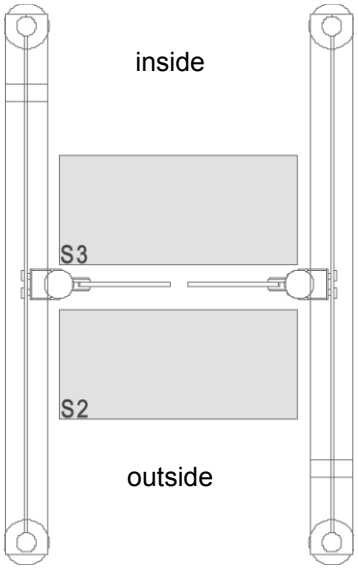


5.2.10.1 Functional sequence using control by separation sensors S2 + S3

Symbol	Function
O	Block
	General release
	Continuous release entry
	Continuous release exit
	Single release entry
	Single release exit
	Day/night
-- --	Door leaves closed
I I	Door leaves open
>	Passage outside → inside
<	Passage inside → outside

Night mode
(doors in basic position closed)

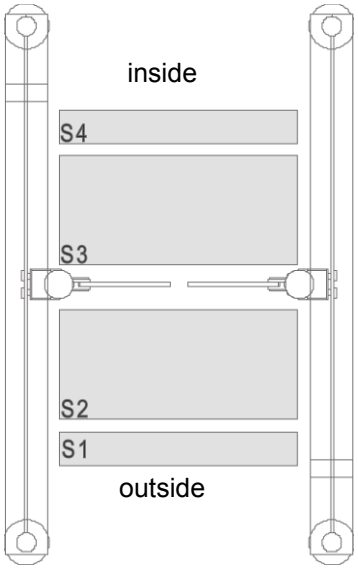
Function	Sensors						Signal			Door	Comment
	S1	S2	S3	S4			Outside	Inside	Alarm		
O		>	<				Red	Red	x	-- --	The door leaves block.
							Green	Green			manual opening
		>					Green	Red		I I	sensor controlled opening
			<				Red	Red	x	-- --	
			<				Red	Green		I I	sensor controlled opening
		>					Red	Red	x	-- --	
		>					Green	Red		I I	
			<				Red	Red	x	-- --	
			<				Red	Green		I I	
		>					Red	Red	x	-- --	



Symbol	Function
O	Block
	General release
	Continuous release entry
	Continuous release exit
	Single release entry
	Single release exit
	Day/night
-- --	Door leaves closed
I I	Door leaves open
>	Passage outside → inside
<	Passage inside → outside

Day mode
(doors in basic position open)

Function	Sensors						Signal			Door	Comment
	S1	S2	S3	S4			Outside	Inside	Alarm		
O		>	<				Red	Red	x	-- --	The door leaves block. When entering the unit an alarm is triggered.
							Green	Green		I I	manual opening
		>					Green	Red		I I	internal release
			<				Red	Red	x	I I	The door leaves remain open (security function).
			<				Red	Green		I I	internal release
		>					Red	Red	x	-- --	The door leaves close.
		>					Green	Red		I I	The door leaves open sensor controlled or via release.
			<				Red	Red	x	I I	The door leaves remain open (security function).
			<				Red	Green		I I	The door leaves open sensor controlled or via release.
		>					Red	Red	x	I I	The door leaves remain open (security function).

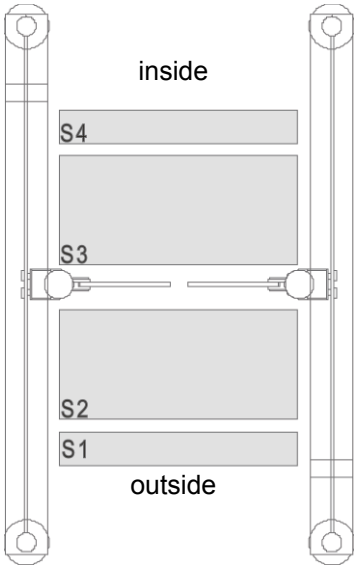


5.2.10.2 Function sequence using control by separation sensors S2 + S3 and safety sensors S1 + S4

Symbol	Function
O	Block
	General release
	Continuous release entry
	Continuous release exit
	Single release entry
	Single release exit
	Day/night
-- --	Door leaves closed
I I	Door leaves open
>	Passage outside → inside
<	Passage inside → outside

Night operation
(doors in basic position closed)

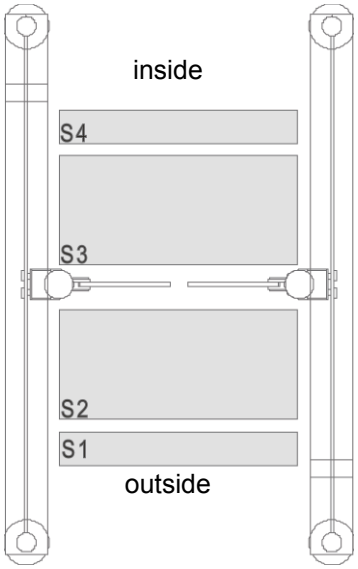
Function	Sensors						Signal			Door	Comment
	S1	S2	S3	S4			Outside	Inside	Alarm		
O	>			<			Red	Red	x	-- --	When entering the unit an alarm is triggered.
							Green	Green			manual opening
	>						Green	Red		I I	Sensor controlled opening
				<			Red	Red	x	-- --	
	>						Red	Red		-- --	
				<			Red	Green	x	I I	Sensor controlled opening
	>						Green	Red		I I	Sensor controlled opening or opening via release.
	>			<			Red	Red	x	-- --	Door leaves close.
		>		<			Red	Red	x	I I	Door leaves remain open (security function).
			>	<			Green	Red	x	I I	An alarm is triggered after an authorised person having left the gate.



Symbol	Function
O	Block
	General release
	Continuous release entry
	Continuous release exit
	Single release entry
	Single release exit
	Day/night
-- --	Door leaves closed
I I	Door leaves open
>	Passage outside → inside
<	Passage inside → outside

Night operation
(doors in basic position closed)

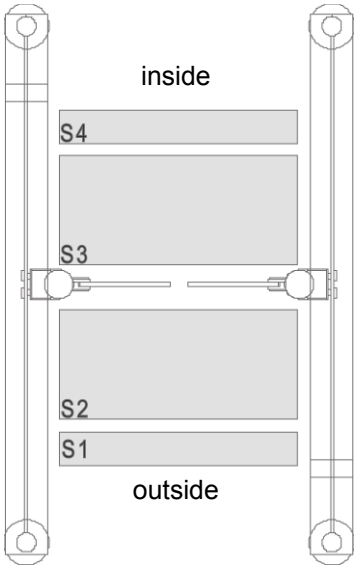
Function	Sensors						Signal			Door	Comment
	S1	S2	S3	S4			Outside	Inside	Alarm		
	>	>					Red	Red	x	I I	Door leaves remain open (security function)
		>	>				Red	Red	x	I I	Doorleaves remain open (security function)
	>		>				Red	Red	x	I I	Door leaves remain open (security function)
				<			Red	Green		I I	Sensor controlled opening or opening via release.
	>			<			Red	Red	x	-- --	Door leaves close.
	>		<				Red	Red	x	I I	Door leaves remain open (security function).
	>	<					Red	Red	x	I I	Door leaves remain open (security function).
			<	<			Red	Red	x	I I	Door leaves remain open (security function).
		<	<				Red	Red	x	I I	Door leaves remain open (security function).
		<		<			Red	Red	x	I I	Door leaves remain open (security function).



Symbol	Function
O	Block
⇐	General release
⇒	Continuous release entry
⇐	Continuous release exit
→	Single release entry
←	Single release exit
%	Day/night
-- --	Door leaves closed
‖ ‖	Door leaves open
>	Passage outside → inside
<	Passage inside → outside

Daytime operation
(doors in basic position open)

Function	Sensors						Signal			Door	Comment
	S1	S2	S3	S4			Outside	Inside	Alarm		
O	>			<			Red	Red	x	-- --	When entering the unit an alarm is triggered.
⇐							Green	Green		‖ ‖	manual opening
⇒	>						Green	Red		‖ ‖	Door leaves remain open.
⇒				<			Red	Red	x	-- --	Door leaves close.
⇐	>						Red	Red	x	-- --	Door leaves close.
⇐				<			Red	Green		‖ ‖	Door leaves remain open.
→	>						Green	Red		‖ ‖	internal release
→	>			<			Red	Red	x	-- --	Door leaves close.
→		>		<			Red	Red	x	‖ ‖	Door leaves remain open (security function).
→			>	<			Green	Red	x	‖ ‖	Door leaves remain open (security function).
→	>	>					Red	Red	x	‖ ‖	Door leaves remain open (security function).



Symbol	Function
O	Block
	General release
	Continuous release entry
	Continuous release exit
	Single release entry
	Single release exit
	Day/night
-- --	Door leaves closed
I I	Door leaves open
>	Passage outside → inside
<	Passage inside → outside

Daytime operation
(doors in basic position open)

Function	Sensors						Signal			Door	Comment
	S1	S2	S3	S4			Outside	Inside	Alarm		
	>	>					Red	Red	x	I I	Door leaves remain open (security function).
		>	>				Red	Red	x	I I	Door leaves remain open (security function).
	>		>				Red	Red	x	I I	Door remains open
				<			Red	Green		I I	internal release
	>			<			Red	Red	x	-- --	Door leaves close.
	>		<				Red	Red	x	I I	Door leaves remain open (security function).
	>	<					Red	Red	x	I I	Door leaves remain open (security function).
			<	<			Red	Red	x	I I	Door leaves remain open (security function).
		<	<				Red	Red	x	I I	Door leaves remain open (security function).
		<		<			Red	Red	x	I I	Door leaves remain open (security function).

5.3 Exchange of signals with other assembly sections

Standard relay contacts and transistor outputs (24 V DC) are available for feedback signals, e.g. rotation signal or release.

The feedback signals can be programmed as wished, i.e. processed by the software and allocated to particular output channels.

Typical assembly sections with which an exchange of signals can take place are:

- Card-reader systems
- In-house control and communication systems
- Hazard warning system
- Fire alarm system

A request may be made for a KGB service partner or a site engineer trained by KGB to carry out programming.

5.4 Parameter settings at the sensor gate

- The properties of the unit are determined by the unit software and what are known as parameters.
- By modifying parameters, a technician may tailor the system to the customer, e.g. allocation of the electrical inputs and outputs.
- The unit is completely programmed and fully functional when it is delivered.
- In many cases, it is not necessary to programme the unit, as the standard settings are often adequate.

The optimal control functions for the particular purpose are generally specified in the technical details and are therefore taken into account when the work is commissioned.

KGB or the KGB's service partners will be happy to help with subsequent modifications or expansions.

The following control option is available:

On-site programming using a personal computer (x86 compatible), by trained technical personnel.

The setting of parameters require special knowledge and a mastery of the software Flap Control Center.

- In particular, the interplay with the adjoining systems must be calibrated, in order to avoid possible dangers.
- Changes to parameters should be implemented by KGB's authorised and trained service partners.
- KGB is pleased to offer you training sessions for your technical personnel, which may take place on-site.

5.5 Behaviour during commissioning

During commissioning, the door leaves are adjusted automatically. The door leaves move into the set standard positions.

5.6 Behaviour in the event of a mains interruption

In the event of a power cut, the door leaves can be moved in both directions. The door leaves rest in the position they stay in the event of a mains interruption.

5.7 Behaviour upon return of power

Upon return of power, the door leaves are adjusted automatically. The door leaves move into the set standard positions.

6 Installation

6.1 Prerequisites for installation

This section looks at the issues that must be dealt with before installation.

6.1.1 Requirements relating to the installation site

- The environmental conditions set out in the climate classification must be observed.
  see section *3.4 Climate class of the unit in accordance with ICS*
- The ground must be suitable for dowelling the unit. When drilling, ensure that no damage occurs to underfloor heating or similar installations in the ground.

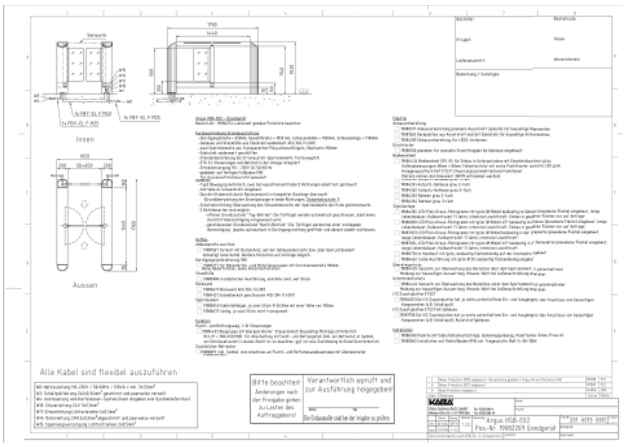
6.1.2 Technical documents required

Always necessary

- Operating instructions
- Drawings:
  In general, the ground plan and view are enclosed.

May be necessary, depending on project

further applicable documents, see *chapter 1.4 Further documents*



Views HSB-E02

6.1.3 Tools and auxiliaries

The tools for installation and for maintenance and service are largely identical.

Standard tools

- Percussion drill
- Stone drill Ø 12 mm
- Spirit-level
- 2 m folding rule
- Screwdriver (cross-head)
- Electric screwdriver (slotted)
- Set of allen keys
- Wire strippers
- Side cutter
- Welding set
- Measuring beaker
- 25 l mixing bucket
- Drill agitator

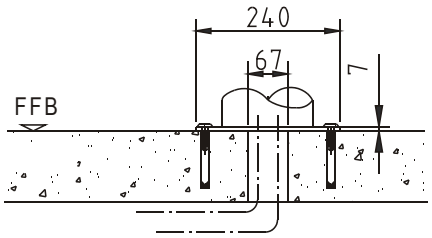
Multimeter

Special tools

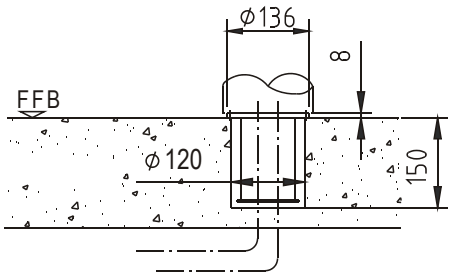
- Multimeter
- PC with Software Flap Control Center (FCC) for
  - Parameterisation
  - Programme update
  - Troubleshooting

Auxiliaries

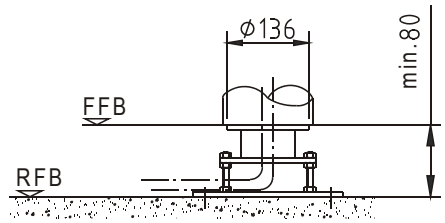
- Cable ties
- Cleaning agents, see section *8.1 Cleaning*
- Grout



Secured with shear connectors on FFL

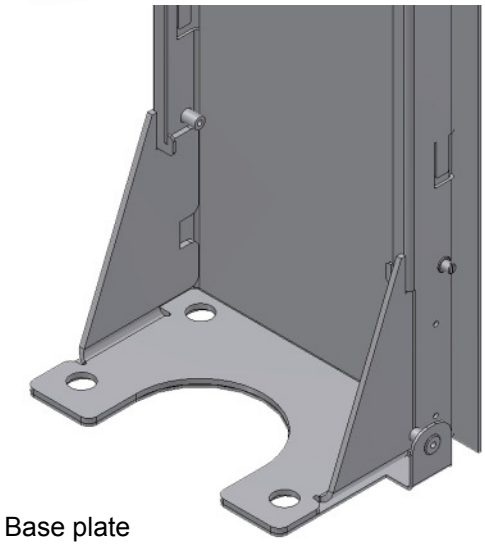


Secured with floor elements on FFL



Secured with sub-construction on SFL

Fixing anchor



Base plate

6.2 Installation of the mechanical system

Argus HSB can be installed as follows:

- With fixing anchors or shear connectors on finished floor level (FFL) (standard)
- With floor elements, cast on finish floor level (FFL) with bonding grout.
- With sub-construction on sub floor level (SFL)

6.2.1 Installation on finished floor level with fixing anchors

This is how it is installed on finished floor level:

► Draw bore holes.

► Drill bores with Ø 8 mm.

► Hammer in the fixing anchor through the bores in the base plate.

► Tighten the system using bolts.

Installation on finished floor level

6.2.2 Installation on finished floor level with shear connectors

Installation on finished floor level

① Shear connector with internally threaded sleeve

② Washer with chamfer

③ Countersunk screw

④ Bonding grout

This is how it is installed on finished floor level:

► Place the column on the floor.

► Draw bore holes.

► Drill the holes (14 mm Ø, 90 mm deep).

► Clean the drill holes (e.g. with an air pump and a hose).

► **NOTICE!** Do not work with pressurised air! The dust damages the unit.

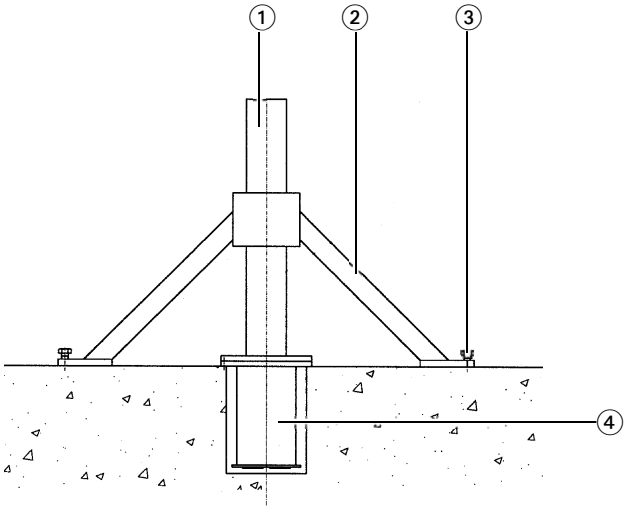
► Fill half the drilled hole with bonding grout.

► Push the shear connector in or use a hammer.

► Level off the bonding grout that is oozing out right away.

► Wait for grout to set (see manufacturer's instructions).

► Assemble the column after it has hardened.



Assembly device

6.2.3 Installation on finished floor level with floor elements

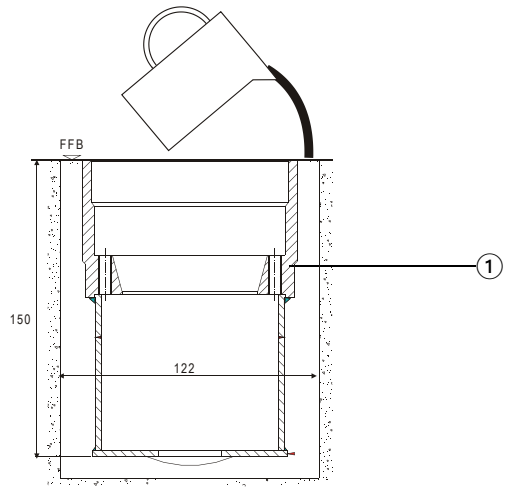
Assembly device

① Assembly device no. 19093559

② Assembly device no. 19092505

③ Adjusting screws

④ Floor element



Casting with casting mortar

Technical data for casting mortar (quick assembly mortar PCI cast fix) 20 kg paper sack, Values for 23 °C air temperature	
Seam sizes	min. 5 mm max. 50 mm
Yield	1.6 kg powder / ca. 1 l hollow space
Air and underground temperature	+5 °C to +30 °C
Water addition	250 ml / 1 kg powder 5.0 l / 20 kg powder
Mixing time after adding water	2 min
Processing time after mixing	10 min
Hardening time	Approx. 30 min

This is how the assembly device is positioned:

- ► Drill core hole according to the drilling pattern.
- ► Insert the floor element with tensioning elements and column.
- ► Attach the assembly devices to the column.
- ► Align the assembly device with adjusting screws so that the floor element is flush with finished floor level and the horizontal bottom side of the flange.
- ► Fill the core hole with bonding grout.

Casting with casting mortar

① Floor element

WARNING
Damage to skin or eyes

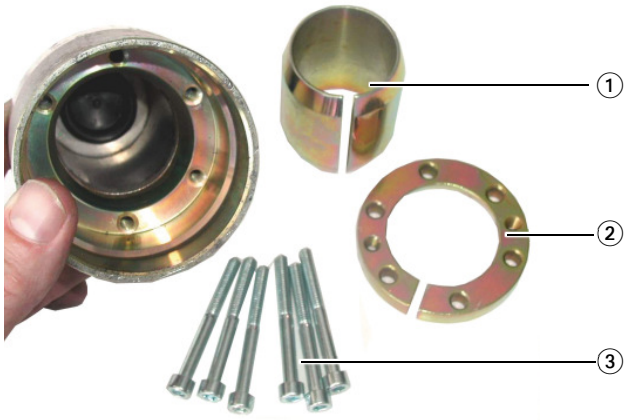
⇨ Avoid contact with the skin or eyes.

NOTE
Process the casting mortar quickly.
Before starting work, set up all equipment you need next to the hole: measuring cup, bucket 25 l and drill whorl.

This is how to cast with casting mortar:

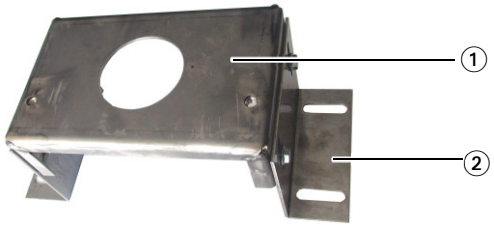
- ► Clean and then moisten the surface of the floor.
- ► If there are supply lines through the ceiling, seal them.
- ► Add two-thirds of the required water quantity.
- ► Mix for two minutes with a drill whorl (approx. 400 rpm).
- ► Add the rest of the water when doing so.
- ► **NOTE:** Allow for 10 minutes processing time after mixing.
- ► Fill up the core hole quickly without interrupting your work.
- ► Protect the casting mortar from drying out quickly (cover if necessary).
- ► Clean the tools immediately with water.

⇨ After approx. 30 min. the floor element can bear loads.

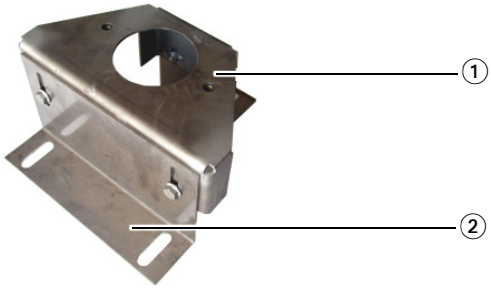


Clamping element, individual parts

Clamping element, assembled



Sub-construction for HSB with square feet



Sub-construction for HSB with round feet

Clamping element, individual parts

① Clamping sleeve

② Straining ring

③ Hexagon socket screws

This is how it is installed on finished floor level:

► Route the cable through the column from the bottom.

► Insert the tube into the tensioning element.

► Tighten the tensioning element with Allen screws.

6.2.4 Installation of unfinished floors with sub-contruction

Sub-construction for HSB with square feet

① Mounting plate

② Sheet metal angular bracket

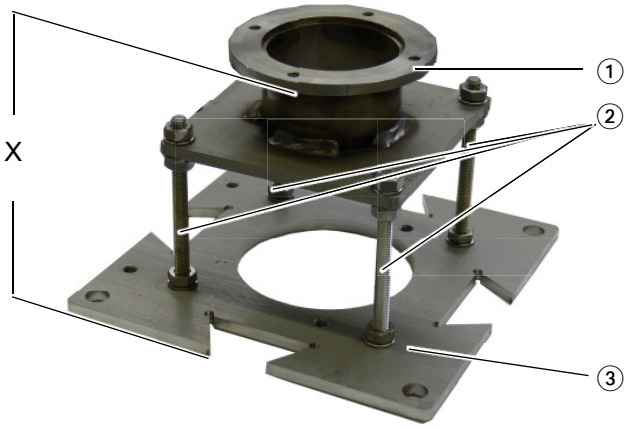
Sub-construction for HSB with round feet

① Mounting plate

② Sheet metal angular bracket

The sub-constructions can be adjusted in height and are available for the following differences between sub floor level and finished floor level:

- 80-120 mm
- 121-160 mm



Sub-construction

Fixing anchor M8 x 95

Sub-construction

① Floor element

② Threaded rods

③ Base plate

This is how it is installed with sub-construction:

► Align the floor element with a water level.

► Attach the base plate to the sub floor level with M8 x 95 fixing anchors.

► Adjust the height of the sub-construction to match the height of the finished floor level. The sub-construction must be at the same height as the finished floor level.

► As from a measure “X” = 180 mm the floor element must be equipped with longer threaded rods and an additional flange plate. Height of the threaded rods is fixed by stabilising stainless steel tubes.

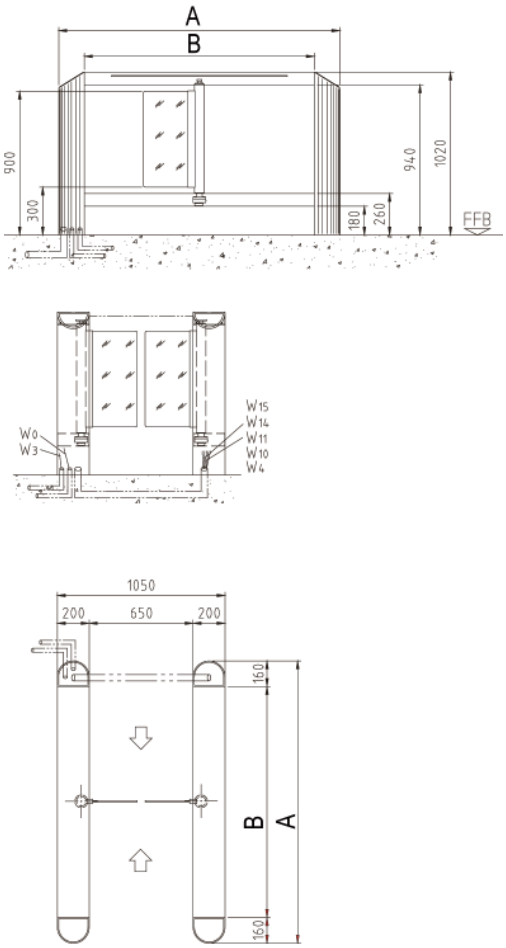
6.3 Installation electrical system

WARNING
Risk of injury from electric current

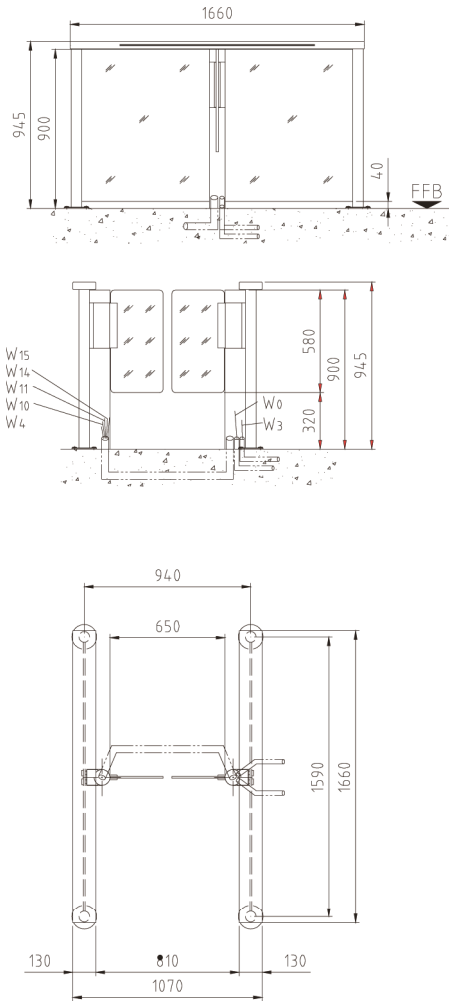
- ⇨ Only allow electrical work to be carried out by specialist personnel.
- ⇨ Comply with the national regulations.
- ⇨ Observe local particularities in energy provision.

6.3.1 Positioning the empty tubes

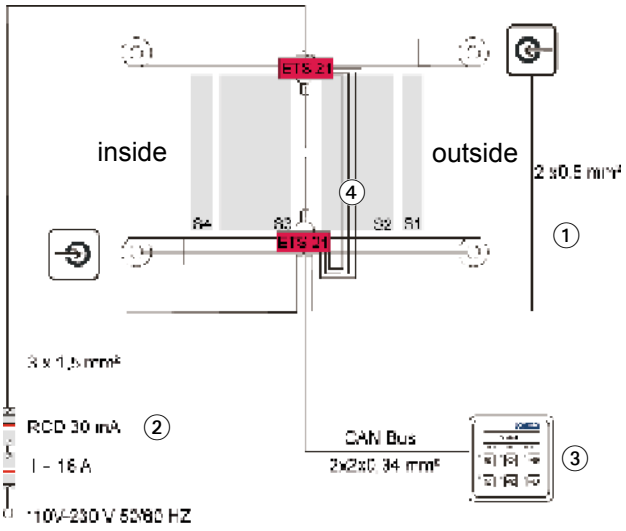
Depending on the type of the unit and the installation variant the empty tubes have to be positionned differentially.
Use M25 empty tubes with an outer diameter of 25 mm.



Empty tubes HSB-E02



Empty tubes HSB-E07



Cabling the components

6.3.2 Cabling the components on site

NOTE
Plan residual current protective device (RCD) on-site.

NOTE
The control units ETS21 are positioned in the pedestals outside or inside, depending on project.

① one floating contact per direction of passage (at KGB) or control of the card reader in line with the system supplier's specifications.
If the identification system required additional feedback signals, further cables are required.

② Mains supply line
The mains supply line must be laid in accordance with the line lengths stipulated in the national or regional connection regulations.

③ CAN bus (external)

④ Lay together in an empty conduit M 40.
All control lines should be carried out flexible.

This is how to install the hardware:

► Draw in the connecting cable through the central pillar and connect it to the mains plug.

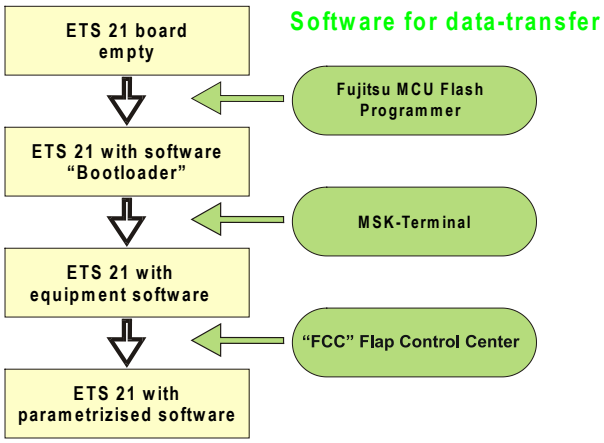
► Attach strain relief devices (cable ties).

► Draw in the connection cable to the second door leaf and connect it.

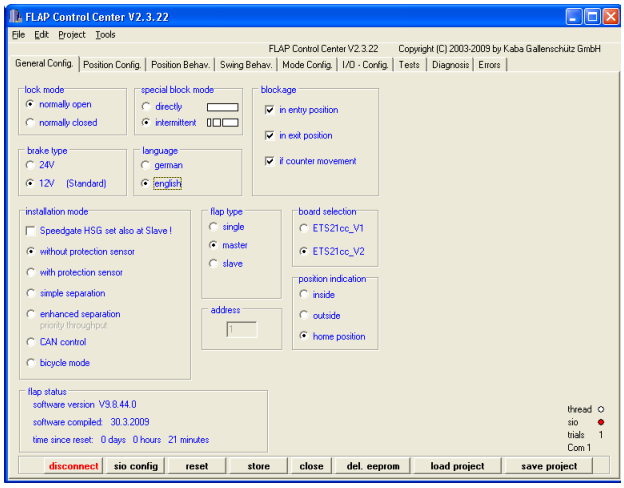
► Attach strain relief devices (cable ties).

► Connect the power supply unit.

NOTE
Carry out flexible all supply lines.



Software for the data transfer



Software Flap Control Center

6.4 Installation software

The ETS21 uses the following operating software:

- Control software for the processor
- System software for the system groups
- Master files with standard parameters

The software for the systems is loaded prior to delivery. The system parameters are set after installation.

Software Flap Control Center (FCC) for unit parameterisation

Detailed information on the programmable functions see *Flap Control Center (FCC) software description, No. 30197*.

7 Commissioning

NOTE
The PIL must be commissioned by specialist personnel only.

7.1 Commissioning sequence

This is how to commission a unit:

- ► Check for proper execution of the electric connection.
- ► Check mains power: 100 - 230 V AC / 50-60 Hz.
- ► Check mechanical execution.
- ► For cleaning the system.

7.2 Commisioning the sensors

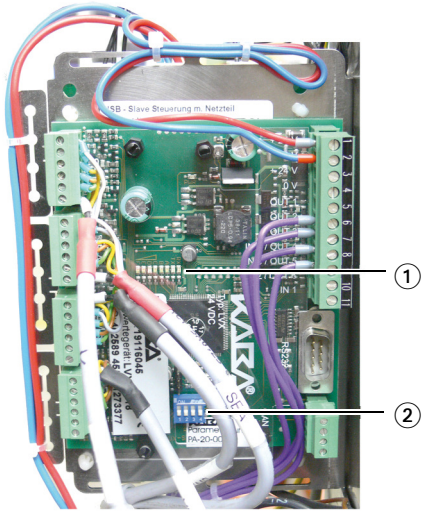
① LED error indication /signal strength

② DIP-switch

This is how to commissioning the sensors:

- ► Remove the protective films.
- ► Clean the sensors.
- ► Switch the evaluation unit off (e.g. via fuse F1).
- ► Set DIP switch 3 to ON.
- ► **Caution!** During self-calibration, the sensor field must be clear.
  Switch the evaluation unit on.
  - ⇨ The evaluation unit sets the correct amplification for the sensor strips during self-calibration.
  - ⇨ LEDs C to F indicate the signal strength. Values from C to E are problem-free.
  - ⇨ The red error LED does not light up.
- ► Set DIP switch 3 to OFF after at least 2 seconds.
  - ⇨ The evaluation unit stores the values in the EEPROM.
  - ⇨ The evaluation unit goes into normal mode.

If the green LED D does not light up after the self-calibration, the following causes are possible:



LVX-evaluation unit

- Individual beams are covered or dirty: uncover covered sensor strips, clean dirty sensor strips.
- The difference in brightness between the strongest and weakest beam is too big: use sensor strips with beams of the same strength.

If only the yellow LED E lights up, this does not usually lead to restrictions in functionality.

If the red error LED flashes during self-calibration, it means individual beams were detected as faulty and are masked out. It is not possible to operate the unit.

In order not to save the settings, switch of the power supply when DIP switch 3 is ON.

7.3 Functional test of the unit including a report

This is how to perform a functional test of the unit including a report:

► Check a single passage following a release from the card reader or release button.

► Check the positioning in the basic position.

► Check all functions that can be triggered via the control desk (e.g. General release, Block etc.).

► Check behaviour when currentless.

► Check set-up after a power failure.

► Check optional functions, e.g. the optical signal device.

► Check the status signals.

► Carry out first inspection on the basis of the expert inspection list

► Document first inspection in the inspection book.

► Hand over system and documents to the customer.

► Instruct the customer in using the system.

8 Maintenance

8.1 Cleaning

WARNING
Electrical shock if electrical parts come in contact with water
Switch off the unit prior to cleaning. Activate the cleaning / service operation function.

Cleaning intervals

The unit must be cleaned regularly so that the surfaces stay clean and there are no malfunctions caused by environmental factors. Also make sure to remove dirt from the stainless steel because corrosion is possible.

The unit must be cleaned thoroughly at least once a year.
Depending on the environmental conditions, it may be necessary to clean the unit at shorter intervals.

Recommendations for protecting the unit

- Apply cleaner with a cloth.
- Do not use any abrasive cleaners.
- For polished surfaces, clean in the direction of the polishing.
- Follow the instructions of the cleaner manufacturer.

Cleaning material

Material	Cleaning material
Stainless steel	Inox Top, Kaba product no. 19110045
Stainless steel, mirror polished	chloride free glass cleaner, possibly Aceton*
Aluminium, anodised	Inox Top, Kaba product no. 19110045
Plastic-coated surfaces or plastic surfaces	Final Touch, Kaba product no. 19110043
Steel, hot dip galvanised	Mild soapy water, then rinse thoroughly
Glass	Final Touch, Kaba product no. 19110043
Acrylic glass / polycarbonate	Anti-static synthetic cleaner + care, Kaba product no. 19109707

* Wear gloves for cleaning jobs with Aceton.

8.2 Maintenance plan

The maintenance plan below shows which maintenance tasks must be carried out, and at what intervals.

General information

- Maintenance should be carried out at least once a year, or after at the latest 500.000 passages.
- In addition to the routine function checks, maintenance also includes cleaning the unit.
- All bearings are lubricated for the lifespan of the unit and therefore do not need to be re-lubricated.
- KGB also recommends having an expert inspection carried out as part of maintenance.

Structure of the maintenance plan

Task	weekly	quarterly	half-yearly	yearly	Remark	Technical personnel only
			X			X

Risk of injury caused by technical errors

☝ Technical errors can result in injury. Attempts to fix errors by untrained persons can result in personal injury or property damage, e.g. due to electric shock or mechanical injuries.

✓ Maintenance works for which the **Technical personnel only** column is checked may only be carried out by technical personnel.

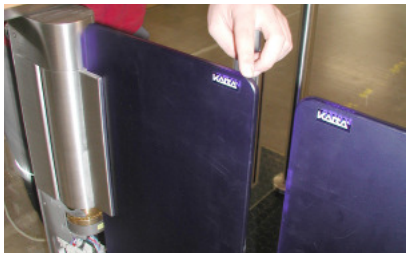
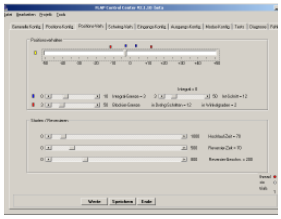
✓ Observe the time intervals specified in the maintenance table. It is indicated how often the maintenance work should be carried out.

When checking the functions, trigger each function and carry out an interlock process. For details, see section *5.2 Operating modes and functions.*

Task	weekly	quarterly	half-yearly	yearly	Remark	Technical personnel only
Carry out a visual inspection for external damage to the unit.				X	Operator: In the event of a serious damage, notify the customer service. Technical personnel: In the event of severe damage, notify the operator of the faults and, if appropriate, make an offer for repairs.	
Carry out avisual inspection for internal damage.				X	Check cabling for squashed cables or loose connections. Inspect mechanical parts for rust and damage.	X
Check fastening screws on the system and on the floor.				X	Tighten any loose screws.	X
Carry out a visual inspection for dirt on the sensors.				X	Clean if necessary.	
Check the electrical parts. ► Check if all connectors are securely in place. ► Check if the board is securely in place.				X		X
Carry out a functional test of the sensors: ► Cover each sensor. ⇨ An alarm must be triggered. ⇨ The door leaves must not open.				X		X
Check the general release function.				X		X
Check the **block** function.				X	Carry out the inspection for both directions.	X
Check the **single release** function.				X	Carry out the inspection for both directions.	X
Check the **permanent release** or **permanently opening** function.				X	Carry out the inspection for both directions.	X
Check the **night mode** function.				X	Carry out the inspection for both directions.	X
Check the **day mode** function.				X	Carry out the inspection for both directions.	X
Check the functions of the optical signal device.				X	If supplied	X

Task	weekly	quarterly	half-yearly	yearly	Remark	Technical personnel only
Check the behaviour in the event of a power outage.				X	The system can be freely moved during a power outage.	X
Check the behaviour when power is restored.				x	The system sets up when power is restored and moves to the home position.	X
Check running noises made by the unt: Whilst checking the basic functions, pay attention to running noises.				X	An increased level of noise is frequently the result of wear or mechanical defects.	X
Check the tooth clutch: ► Set up the software: Select the range **general configuration** > **block for passage in opposed direction**. ► Select the function **single release**. ► Block the door leaf on start-up. ⇨ The tooth clutch responds.				X		X
Check the friction clutch: ► Remove connector **OL1/OL2** (13-16) from ETS21. ► Operate the **single release** switch. ► Hold the door leaf during the closing procedure. ⇨ The friction clutch is activated. 				X	The friction clutch should be activated at a force of approx. 6-11 Nm.	X

Task	weekly	quarterly	half-yearly	yearly	Remark	Technical personnel only
Check the locking force: ► Pull tangential with 120 Nm on the door leaf and check whether the tooth clutch can withstand the traction. The tooth clutch opens: ⇨ Replace tooth clutch, see section *10.5 Replacing the tooth clutch with encoder*. The tooth clutch stays closed: ⇨ the locking force is OK..				X		X
Check the end point damping: ► Trigger the **single release entry** or **single relese exit** function and monitor the movement of the door. ⇨ If the door swings back into the end-points, the PID control must be adjusted.				X	Software Flap Control Center (FCC) Menu **Swing behaviour**	X
Check the feedbacks at the control unit ETS21.				X		X

Task	weekly	quarterly	half-yearly	yearly	Remark	Technical personnel only
Check the gear backlash: ► Call up the **Vibration behaviour** menu in the FCC. ► Rotate one door leaf slowly to the forward and rearward mechanical limit positions.  ⇨ The gear backlash is correct if, in the **Position Behaviour** menu, under **Positioning behaviour**, the marks +5 / -5 are not exceeded. 				X	Software **Flap Control Center** (FCC)	X

9 Error analysis

9.1 Error analysis procedure

Fehlereingrenzung

First, speak with the person responsible on-site. The problem must be clearly defined to find its cause.

Important questions:

- Is it only a case of improper operation (e.g. by untrained personnel)?
- In the event of an error, do not switch off or restart the unit.

In the event of an error, do not switch off or restart the unit.

Speak to your contact

► Ask whether the unit was used improperly before the error occurred.

► Analyse from which locations in the building the unit can be operated, e.g. receptionist‘s OPL, OPL in the security department, fire alarm or hazard detection systems.

► Find out what the OPL are and were displaying.

► Ask whether any technicians from different trades were working on the system.

► Ask whether this error occurred before and which cause was determined.

Inspection by operator or specialist personnel

► Perform a visual check:

- Check the unit for external damage, e.g. removed or damaged safety strips and/or sensors.
- Can you determine negative external influences on the unit, such as:
  - Is sunlight disturbing the sensors?
  - Is there moisture on or in the unit?
  - Is a glass façade or a reflecting surface causing reflections?

► Read the error codes at the OPL, if present.

Inspections to be performed by specialist personnel only

► Checking the status of inputs and outputs at the controls.

► Reading out the unit status using the software.

► Reading out the error codes in the software.

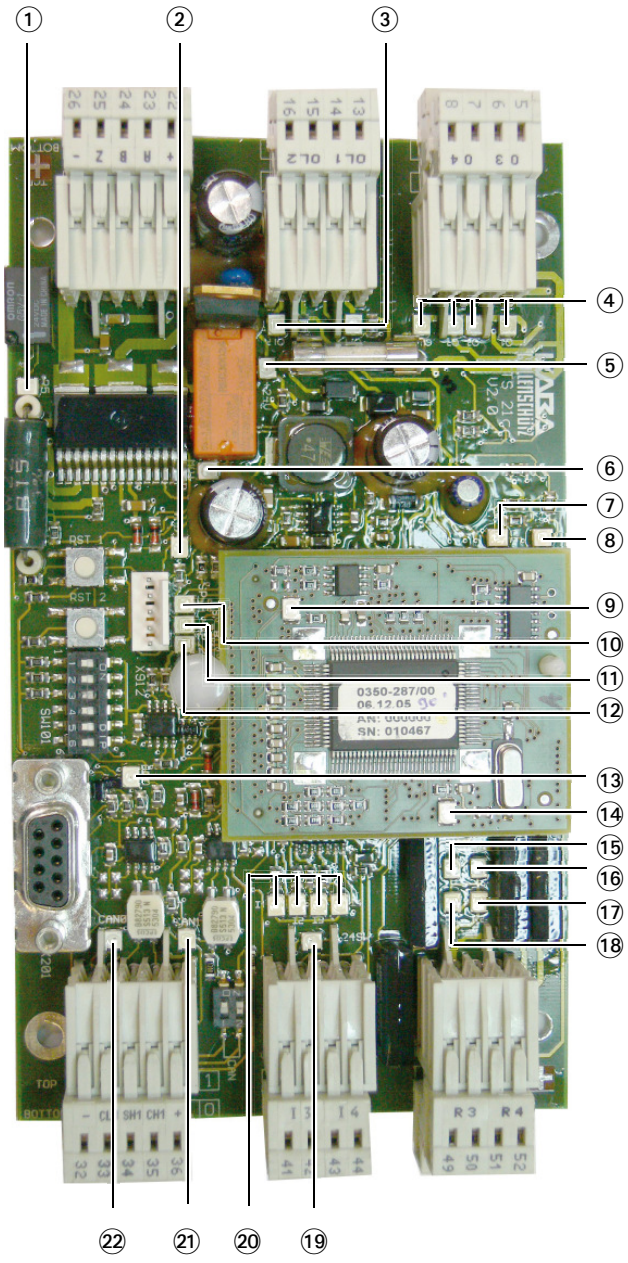
► Checking all moving parts in the unit.

► Checking PCBs, power supply units and cabling.

► Disconnecting superior reader systems and other devices from the unit.

► Checking the functions of the unit.

NOTE
In the event of irregular errors with identical patterns, it may be necessary to check and test for several hours or even days before being able to determine the cause. Support by the operator may be beneficial for recording malfunctions over an extended period of time.



Control unit ETS21

9.2 ETS21 status displays

① **Relay R5**
on (yellow) = relay has picked up

② **5 V power supply**
on (green) = supply voltage present

③ **Power output OL 1**
on (red) = power output active

④ **power output OL 2**
on (red) = power output active
O1, optical signal device outside green
on (rot) = optical signal device on
O2, optical signal device outside red
on (red) = optical signal device on
O3, optical signal device inside green
on (red) = optical signal device on
O4, optical signal device inside red
on (red) = optical signal device on

⑤ **24 V power supply**
on (green) = supply voltage present

⑥ **Motor relay**
on (green) = motor relay on

⑦ **CAN 1 active**
flashing = external bus active

⑧ **CAN 0 active**
flashing = internal bus active

⑨ **Control pc board LED 1**
Motor monitoring/parameters missing

- on (green) = rated motor current exceeded
- flashing (3 x LED1, 3 x LED2) = no parameters available

⑩ **Rotary encoder track A**
flashing (green) = transmitting counting pulses

⑪ **Rotary encoder track B**
flashing (green) = transmitting counting pulses

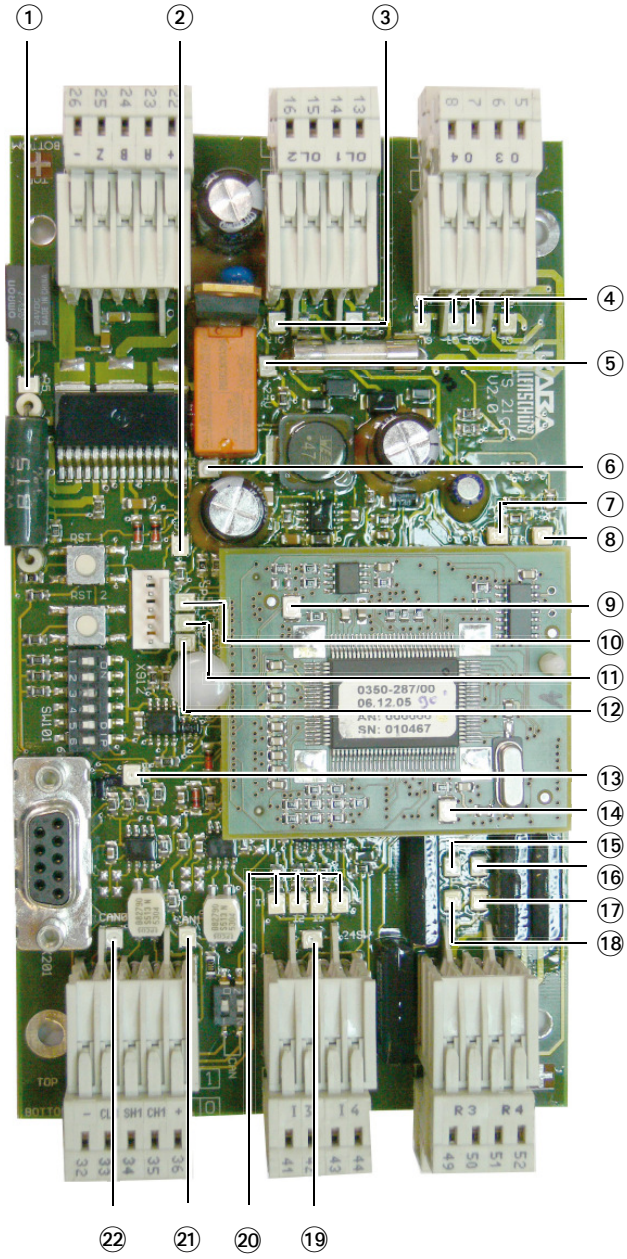
⑫ **Rotary encoder track Z**
lit (green) = system in electrical zero position

⑬ **RS 232 interface**
flashing (green) = data transfer

⑭ **Control pc board LED 2**
parameters missing
flashing (green) = missing parameter

⑮ **Relay R3**
on (yellow) = relay has picked up

⑯ **Relay R4**
on (yellow) = relay has picked up



Control unit ETS21

⑰ **Relay R2**
on (yellow) = relay has picked up

⑱ **Relay R1**
on (yellow) = relay has picked up

⑲ **Power supply I1 - I4 (24 V)**
on (green) = supply voltage is present

⑳ **Input I1, single release entry**
on (green) = single release entry granted

Input I2, single release exit
on (green) = single release exit granted
Input I3, general release
on (green) = general release selected
Input I4, block
on (green) = block selected

㉑ **CAN 1 power supply**
on (green) = supply voltage for external bus present

㉒ **CAN 0 power supply**
on (green) = supply voltage for internal bus present

9.3 Error checklist

Structure of the error checklist

Error	Cause	Elimination	Technical personnel only
			x

Risk of injury caused by technical errors

Technical errors can result in injury. Attempts to fix errors by untrained persons can result in personal injury or property damage, e.g. due to electric shock or mechanical injuries.

✓ Maintenance work for which the **Technical personnel only** column is checked may only be carried out by technical personnel.

✓ Errors caused by control or mechanics malfunctions should only be fixed by technical personnel.

Error	Cause	Elimination	Technical personnel only
The door leaves do not open.	No release signal is transferred.	► Check control with reader (LED I1/I2).	x
	Reader does not receive a ready message (ETS21)	► Check control with ETS21 (LED R1/R2).	x
	The motor is blocked or defective.	► Check the motor control (motor relay LED MOT).	x
	The power supply is defective.	► Check the current (terminals 9, 11).	x
The door leaves do not close.	The motor is defective.	► Check the motor.	x
One door leaf does not open and close.	The drive unit is defective.	► Replace the drive unit.	x
One door leaf does not open and close completely. The brake makes noises when opening and closing.	The tooth clutch is defective.	► Remove the drive unit. ► Change the tooth clutch.	x
The motion of the door leaf is, e.g. too fast, too slow or the drive moves beyond the end position.	The respective parameters are not correctly set.	► Check the parameter settings and reset them if necessary.	x
	The motor is defective.	► Remove the motor cable and push manually, check for stiffness	x
	The encoder or the cable of the encoder is defective.	► Check the encoder LED on ETS21cc: pull door across the entire swinging area and observe whether the LEDs blink evenly in an alternating cycle.	x
The locking force of the tooth clutch is inadequate.	The tooth clutch is worn down.	► Replace the tooth clutch.	x
	There is no voltage present on the tooth brake.	► Check output / diode on OL=1: the operating voltage of the brake is 12V.	x
The door leaf does not find the basic position correctly.	The encoder is defective.	► Check the encoder and replace it if necessary.	x
	The new encoder was inserted incorrectly (the zero index is outside of the swinging area).	► Insert the encoder correctly (select the zero index at approx. 45° to the basic position) and reset the parameters for the door positions.	x
	The encoder washer has become loose.	► Check the encoder and replace it if necessary.	x

Error	Cause	Elimination	Technical personnel only
The door leaf presses permanently against the catch.	The poles of the motor are reversed.	► Connect the motor properly.	x
	The position parameters are incorrect, e.g. from a copied project file.	► Reset parameters. Disconnect tooth clutch from the power supply beforehand.	x
	The encoder is defective.	► Check the encoder and replace it if necessary.	x
The tooth clutch is blocked.	The poles of the motor are reversed.	► Connect the motor properly.	x
	The position parameters are incorrect, e.g from a copied project file.	► Reset parameters. Disconnect tooth clutch from the power supply beforehand.	x
	The motor is defective.	► Check the motor and replace it if necessary.	x
	The output OL1 is defective, the tooth clutch is continuously activated.	► Check OL1 output (terminals 13, 14).	x
	There is no current present on output OL1, i.e. the tooth clutch is worn down or defective.	► Replace the tooth clutch.	x
The door leaves can be freely rotated.	The CAN bus connection master-slave is disrupted.	► Check the cabling.	x
	The parameters are not set or are incorrectly set.	► Set new parameters for the unit	x
	There is no supply voltage present.	► Check on-site power supply line. ► Check 24 V DC power supply. ► Check fuse on ETS21cc.	x
	The motor line is interrupted.	► Check the line and the plug.	x
	The ETS21 control unit is defective.	► Replace the ETS21 control unit.	x

Error	Cause	Elimination	Technical personnel only
A release is not possible.	The release signal is not transmitted.	► Check the release signal.	x
	A sensor is dirty.	► Clean the dirty sensor.	
	A sensor is defective.	► Replace the defective sensor	x
	The card reader is defective.	► Check the card reader input at the control unit. ► If the card reader is defective, change the card reader.	x
A permanent alarm is triggered.	The CAN bus connection between master and slave is interrupted.	► Check the cabling.	x
	A sensor is defective.	► Check the sensors and replace-them if necessary.	x

We or the service partners are available if there are questions.

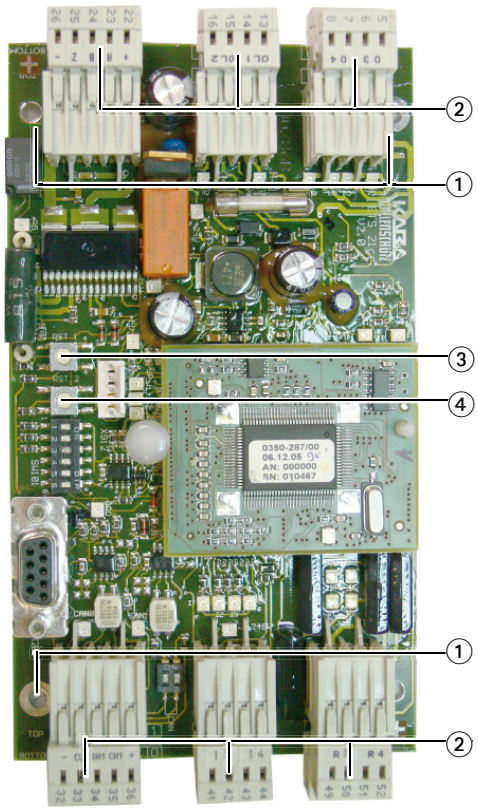
9.4 Error checklist LVX evaluation unit

Errorr	Cause	Elimination	Technical personnel only
LED B flashes twice	The unit is in configuration mode..	Finish configuration mode.	x
LED B is permanently on or off	Synchronisation error; the serial communication is “hanging”.	Restart the LVX evaluation unit	x
LED RX is red	Receiver A error	Replace the sensor strip.	x
LED TX is red.	Transmitter A error	Replace the sensor strip.	x
LED RX and TX are red	The synchronisation on the evaluation unit is faulty.	Replace the sensor strip.	x

Errorr	Cause	Elimination	Technical personnel only
LED RX flashes red LED TX flashes red	Receiver B error Transmitter B error	Replace the sensor strip. Replace the sensor strip..	x x
LED RX and TX are red, LED A, B and F are yellow and LED D is green	Hardware error	Replace the LVX evaluation unit.	x
LED RX and TX are red and LED A, B, E and F are yellow	Hardware error	Replace the LVX evaluation unit.	x
LED RX and TX are red, LED A, B and E are yellow and LED D is green	The parameters are outside the permitted limits.	Correct the parameters in configuration mode and reset, if necessary.	x
LED RX and TX are red, LED A, B, E and F are yellow and LED D is green	The length of the connected sensor strips does not match the stored value.	Perform a self-calibration, see *section 7.2 Commissioning the sensors*	x

10 Service work

10.1 Replacing the control board



Control unit ETS21

① Attachment points

② Plug connections

③ Button **RST 1**

④ Button **RST 2**

NOTE
If the unit is a dual unit with master and slave, the same program versions have to be available on both units.
The program version can be found in the enclosed factory acceptance log.

Prior to replacing the control board, take a reading of the parameters and the program version.

This is how a reading of the parameters and the program version is taken:

► Open the Flap Control Center program.

► Select the **connect** button bottom-left.

⇨ A connection is established to the unit.

⇨ Further buttons appear.

► Select the **save project** button for saving the project.

⇨ A new window opens that has to be used for selecting the target directory.

► Select the target directory on the computer.

⇨ The project file is saved in the target directory on the computer.

► As soon as the project file has been saved completely, select the **OK** button.

► Select the **disconnect** button bottom-left.

⇨ The connection to the unit is diconnected.

This is how the control board is replaced:

► Disconnect the unit from the power supply.

► Unplug the plugs.

► Loosen the control board at the attachment points and remove it.

► Attach the new control board and insert the plugs.
Remember: use the position of the DIP switch from the defective control board.

This is how the program is transferred with the MSK Terminal transfer program:

► Open the **MSK terminal** transfer program.

► Select **COM** > **open** from the menu.

⇨ The interface opens.

► Activate the **RST 1** button on the control board.

⇨ The bootloader logs in to the MSK Terminal.

► Click **Download** and select the program (Flap_V9p8p44.mhx).

⇨ The program is downloaded.

► Once the program is downloaded: select the **Start** button.

► Close the MSK terminal transfer program.

This is how the parameters are transferred to the control board:

► Open the Flap Control Center program.

► Select the **connect** button bottom-left.

⇨ A connection is established to the unit.

► Select the **load project** button.

⇨ A new window opens that has to be used for saving the target directory.

► Select the project file.

► Select the **OK** button.

⇨ The project file is loaded.

► As soon as the project file has been loaded completely, selecet the **OK+Reset** button.

► Select the **store** button.

⇨ The project file is saved.

► Select the **disconnect** button bottom-left.

⇨ The connection to the unit is diconnected.

This is how the unit is put back into operation after the control board is replaced:

► Test the unit.

► Label the defective control board with a material tag and error description and send it back to KGB.

10.2 Replacing of sensors

Sensor in retainer

① Screw holding the sensor

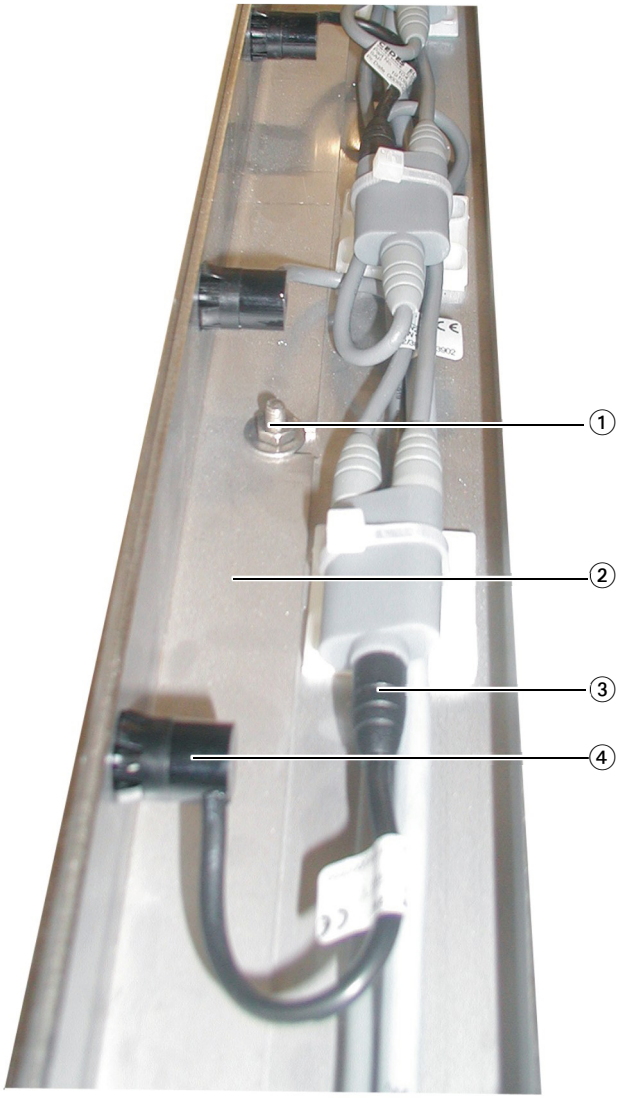
② Sensor retainer

③ Sensor connection

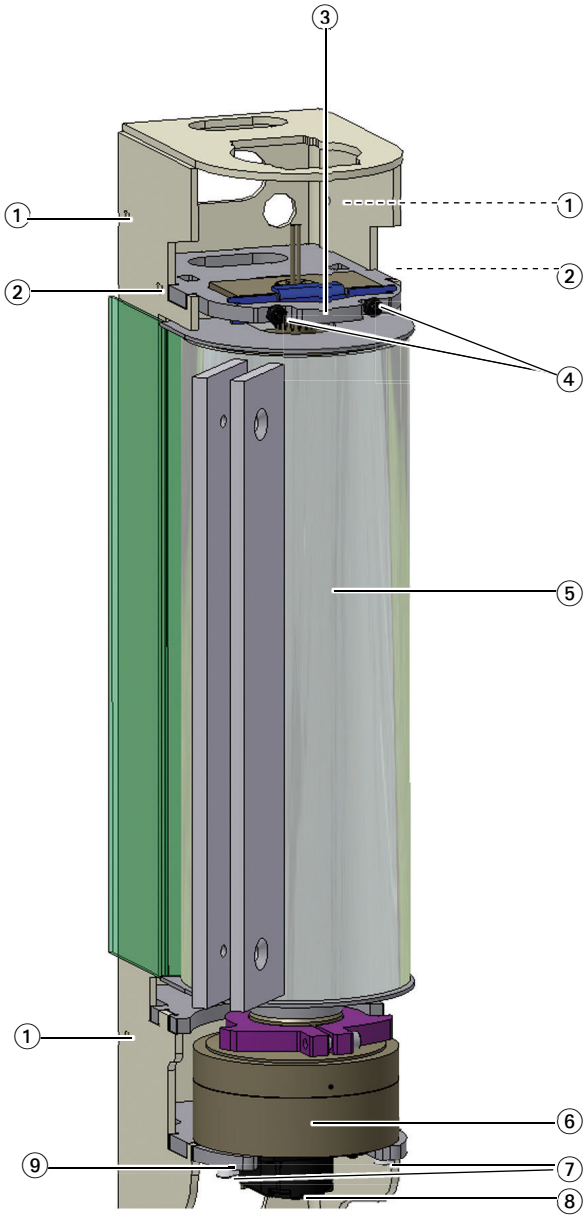
④ Sensor

This is how to replace a sensor:

- ► Disconnect the system from the power supply.
- ► Unscrew the cover-plate.
- ► Release the screw holding of the sensor.
- ► Remove the sensor connection.
- ► Remove the sensor from its retainer.
- ► Fit a new sensor and tighten the sensor retainer.
- ► Check the function of the sensor.
- ► Screw the cover-plate back on.



Sensor in retainer



Drive unit RA12

10.3 Replacing the RA12 drive unit

RA12 drive unit

① Screw on the top and bottom cover

② Safety screws

③ Upper retainer

④ Lifting protection mechanism

⑤ Drive unit

⑥ Tooth clutch

⑦ Safety screws

⑧ Encoder

⑨ Lower retainer

CAUTION
There is a risk of injury if the drive falls
Keep in mind the weight of 5 kg of the drive unit with door leaf. Remove it carefully.

This is how the drive unit is replaced:

► Disconnect the unit from the power supply.

► Remove the screws of the top and bottom cover and remove both covers.

► Unplug the motor, encoder and tooth clutch.

► Removed the two safety screws on the top retainer.

► Loosen the lifting protection mechanism.

► Remove the four safety screws (hexagonal) of the tooth clutch on the lower retainer.

► Push the upper retainer upwards out of the locking and pull it out to the front.

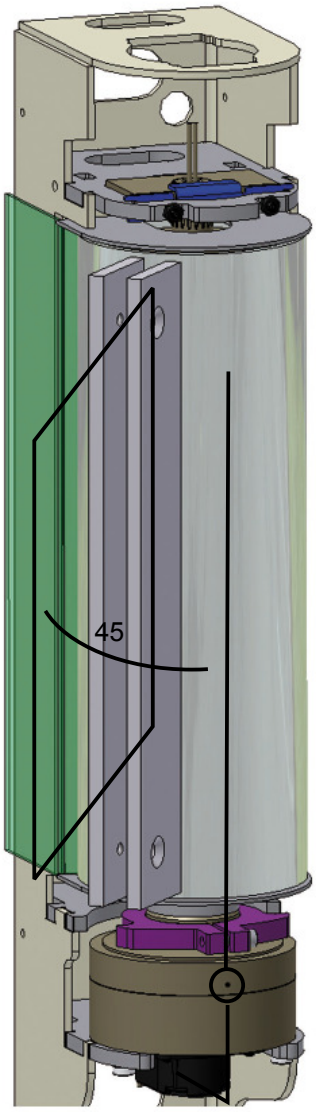
► **NOTICE!** Lines may become damaged upon removal. Remove it carefully.

► Pull out the drive unit with door leaf and tooth clutch out of the retainer to the front.

► **NOTICE!** The encoder may become damaged! Do not place the drive unit and tooth clutch on the encoder.

► Place the drive unit on the tooth clutch.

► Slide in the drive unit.



Drive unit RA12

► **NOTICE!** The line of the tooth clutch (white) can be damaged when you are sliding in the drive unit. Slide it in carefully.

► Check that the drive unit, tooth clutch and encoder are in the correct position:

- The marking on the tooth clutch points to the front, the plug of the encoder to the back.
- The door leaf is at a +45° or -45° angle to the basic position.
- For one-way doors, make sure that the zero index of the encoder is in the direction of opening.

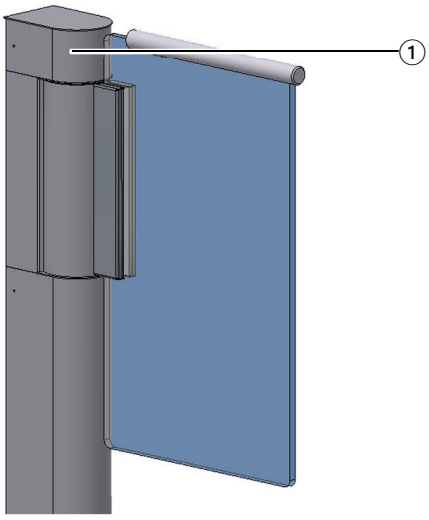
► Pull the line in through the upper retainer and connect the upper retainer.

► Secure the drive unit at the top and bottom with safety screws.

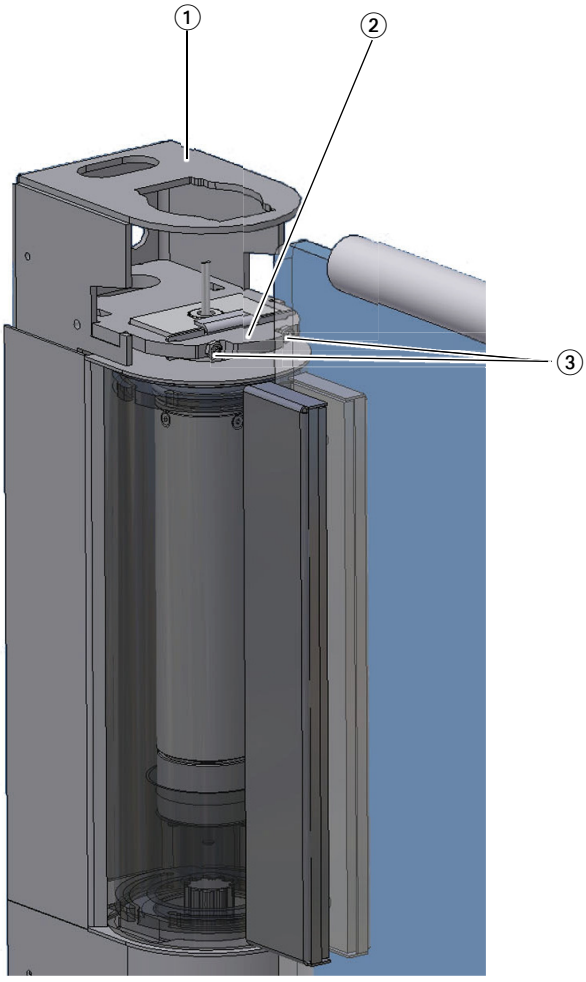
► Plug in the electrical connections.

► Secure the lifting protection mechanism. Maintain a distance of 1 mm between the safety pin and the housing.

► Screw the covers back on.



Retaining plate



Replacing the motor

10.4 Replacing the motor

Retaining plate

① Top retaining plate

Replacing the motor

① Wall installation plate

② Torque support

③ Lifting protection mechanism

This is how the motor is replaced:

► Disconnect the unit from the power supply.

► Loosen the retainer plate at the top.

► Loosen the torque support.

► Remove the lifting protection mechanism.

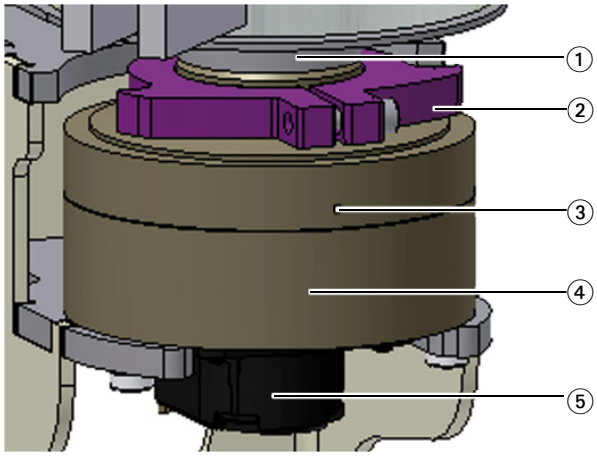
► Rotate the motor by 90° and pull it up through the top through the opening of the wall installation plate.

► Insert the new motor.

► Attach the lifting protection mechanism.

► Attach the torque support.

► Attach the retainer plate at the top.



Tooth clutch

10.5 Replacing the tooth clutch with encoder

Tooth clutch

① Ring

② Mechanical catch

③ Marking on tooth clutch

④ Tooth clutch

⑤ Encoder

This is how the tooth clutch is replaced:

► Disconnect the unit from the power supply.

► Remove the drive unit as described in section *10.3 Replacing the RA12 drive unit*.

► Remove the tooth clutch with encoder.

► Place the ring on the new tooth clutch.

► Place the mechanical catch on the new tooth clutch.
Remember: the mechanical catch has to line up with the door leaf.

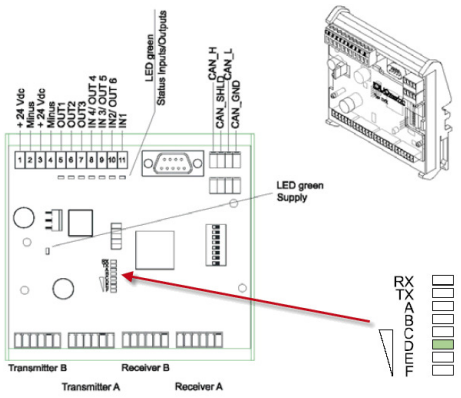
► Insert the tooth clutch into the lower retainer.

► Place the drive unit on the tooth clutch.

► Slide in and install the drive unit as described in section *10.3 Replacing the RA12 drive unit*.

► Check that the drive unit, tooth clutch and encoder are in the correct position:

- The marking on the tooth clutch points to the front, the plug of the encoder to the back.
- The door leaf is at a +45° or -45° angle to the basic position.
- For one-way doors, make sure that the zero index of the encoder is in the direction of opening.



DIP switch

	DIP 1: ON	Firmware update
	DIP 2: ON	Command mode[1]
ON 1 2 3 4 5 6 7 8	DIP 3: ON	Self-calibration when switching on the device[2]

LVX evaluation unit

10.6 Replacing the LVX evaluation unit

NOTE
In case of an order of a LVX evaluation unit always specify the type of the sensor strip. If there are no information provided, the software for a standard sensor strip will be updated. This can lead to errors during the commissioning.

This is how the LVX evaluation unit is replaced:

- ► Disconnect the unit from the power supply.
- ► Pull off the top and bottom connector strip.
- ► Release the clamping and remove the LVX unit.
- ► Put a new LVX evaluation unit in place.
- ► Plug on the top and bottom connector strip.
- ► Put into operation the sensor strip (see section *7.2 Commisioning the sensors*).

Packliste / Packing List

Versand / Dispatch: ☐ Fabrik-Nr.: Factory No.

Montage / Installation: ☐

Kunde: Customer		Buehl,
Anlage: Unit	K8 Antrieb / K8 drive	Anlagen (Stck): Units (Pieces)
Kundenauftrags-Nr.: Order No.		Erstellt durch: Prepared by:
Fertigungsauftrags-Nr. Production Order No.		

Bemerkungen: Remarks	

Pos. Pos.	Stück Soll Pieces (target)	Stück Ist Pieces (actual)	Artikelbezeichnung und Zeichnungs-Nummer Article Description and Drawing No.	Artikel-Nr. Item-No.
01	1		Antriebs- und Verriegelungsaggregat K8 / drive unit and locking device K8	19093563
02	1		Netzanschluß K8 / mains supply K8	19093845
03	1		Befestigungssatz K8 / mounting set K8	19093737
04				
05				
06				
07				
08				
09				
10				
11				
12				
13				
14				
15				

			Verpackungsmaterial / packing equipment	
Pos. Pos.	Stück Soll Pieces (target)	Stück Ist Pieces (actual)	Kartons / Zubehör Pasteboard Boxes / Accessories	Artikel-Nr. Item-No.
01	1		Verpackung für K8 / packing for K8	19107153
02				
03				
04				
05				

Verpackt durch / packaged by: _____

Datum / Date: _____

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Kaba Gallenschütz GmbH, Nikolaus-Otto-Straße 1, D-77815 Bühl (Baden)

Packing list (example)

11 Packaging

- Standard: individually packaged on palette
- Other solutions are also possible depending on the project and customer requirements.

Packing list

- The component configuration depends on the order.
- One or more packing lists are provided in every delivery.

A copy of the packing list is archived in the factory.

12 Disposal

12.1 Disposal of the packaging

All packaging materials used are environmentally compatible, reusable and of only one type.

► Dispose of the packaging material in an environmentally compatible manner and consult the local waste disposal company, if necessary.

12.2 Disposal of old installations

KGB installations are completely recyclable.

The regional / country-specific disposal regulations apply.

► Separate all materials according to type.

► Have old installations disposed of by a certified disposal company.