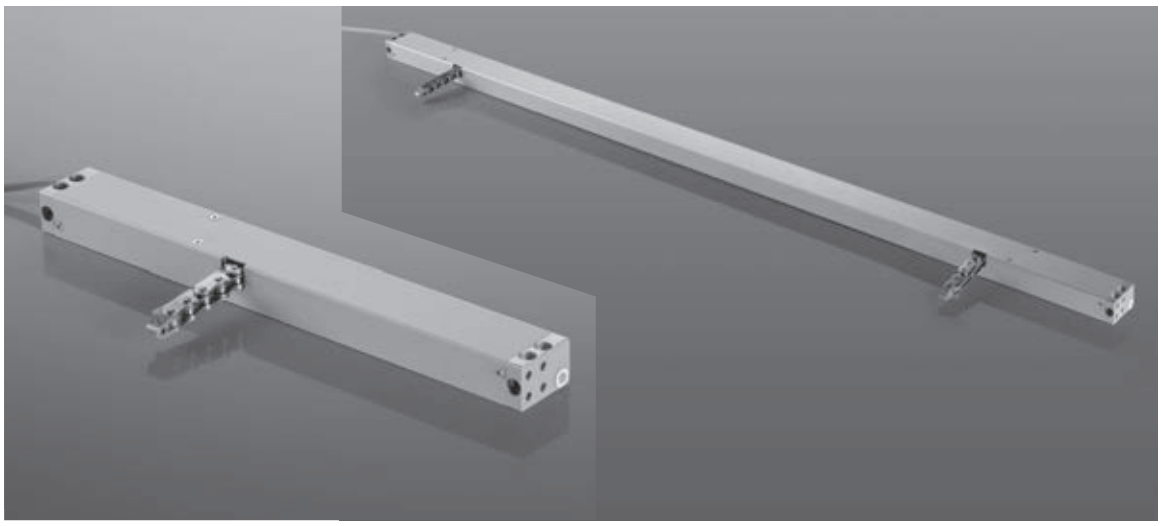
aumüller

Assembly and Commissioning Instructions

according to Machinery Directive 2006/42/EC (annex VI)



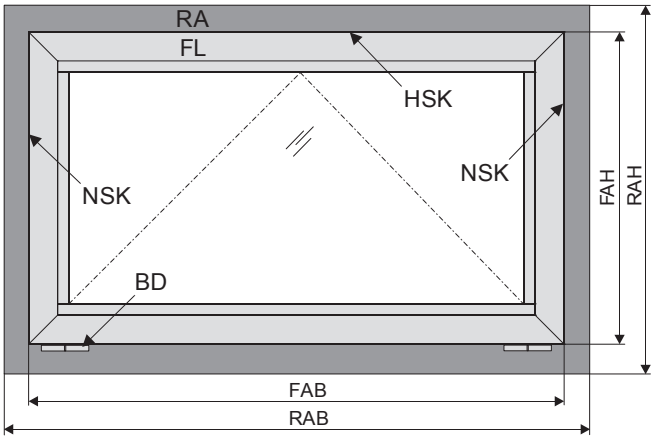
KS2 / KS2 Twin - Chain Drive CE

aumüller

CONTENTS

Abbreviations

Index of abbreviations	
These abbreviations are used consistently throughout these assembly & operating instructions. Unless stated differently, all dimensions indicated in this document are in mm. General tolerances in accordance with DIN ISO 2768-m.	
A	drive
AK	connection cable / drive cable
AP	cover cap
BD	hinge
Fxxx	casement bracket
FAB	overall width of casement
FAH	overall height of casement
FG	casement weight
FL	casement
FÜ	casement overlap
HSK	main closing edge
Kxxx	frame bracket
L	construction lenghth of drive
MB	central hinge
NSK	side closing edge
RA	frame
RAB	overall width of frame
RAH	overall height of frame
SL	snow load
→	opening direction



Risik analysis

for power-operated windows and doors (machines)
according to ISO 12100

General Procedure
Before starting work, a risk analysis must be carried out to systematically ensure compliance with the country-specific legal regulations on occupational safety and accident prevention regulations of the professional associations.
Once the risk assessment for power-operated windows and doors has been carried out by the planner and laid down in the constructional requirements, the installer of the power-operated windows and doors must again carry out another risk assessment to examine whether the planning requirements have been met. In case the protection class (see i. e. leaflet KB.01 of VFF [association windows + facade]) has not been met, further steps to reduce risk are necessary.

Extract from the Machinery Directive 2006/42/EC
„The manufacturer of machinery or his authorized representative must ensure that a risk assessment is carried out in order to determine the health and safety requirements which apply to the machinery. The machinery must then be designed and constructed taking into account the results of the risk assessment."
Separate documentation relating to risk assessment can be downloaded from the homepage of
Aumüller Aumatic GmbH (www.aumueller-gmbh.de).
In addition, the operator needs to be instructed about the residual risks.

It is essential to ensure compliance with the latest version of the guidelines, standards and national legislation applicable to the assembly and the electrical connection of drives / controls, especially:

EN 60335-1 / EN 60335-2-103
„Household and similar electrical appliances - Safety - Part 1: General requirements / - Part 2-103: Particular requirements for drives for gates, doors and windows"

Directive 2006/24/EC of the European Parliament and of the Council - „Machinery Directive"

Local accident prevention regulations.

Fire behaviour of building materials and building components.

Erection of power installations with rated voltages below 1000V

Warning and safety symbols in these Instructions:

The symbols used in the instructions shall be strictly observed and have the following meaning:

⚠ Danger	Failure to comply with the warning notes results in irreversible injuries or death.
⚠ Warning	Failure to comply with the warning notes can result in irreversible injuries or death.
⚠ Caution	Failure to comply with the warning notes can result in minor or moderate (reversible) injuries.
Note	Failure to comply with the warning notes can lead to damage to property.

Caution / Warning
Danger due to electric current.

Caution / Warning
Risk of crushing and entrapment during device operation (is provided as a sticker with the drive).

Attention / Warning
Risk of damage to / destruction of drives and / or windows.

01

SAFETY INSTRUCTIONS

⚠ WARNING Important safety instructions: To ensure safety of persons, these instructions must be strictly observed.
Always keep these instructions available.

Risk of crushing and entrapment!
Window closes automatically!

When closing or opening the drive is stopped by the drive-integrated or external electronic load disconnection.
There is always enough pressure force to crush fingers in case of carelessness.

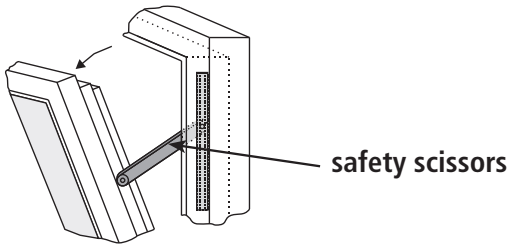
Do not put your hand into the window rabbet or into the moving chain during assembly work and operation !
Make sure that entrapment between the moving casement and the fix elements (i. e. wall), due to openings, is not possible.

Crush and shear points
Crush and shear points between casements and frames must be secured up to a height of 2.5 m (bottom edge of moving element) by devices that will stop the movement by touch or interruption initiated by a person and prevent any injury. A warning sign must be clearly attached to the opening element.
On power-operated doors and gates danger spots of crush and shear points must be secured against entrapment by appropriate measures to prevent injuries.

Casements must be hung or secured such way that, in case one of the mounting elements fails, it will not break away / slam down or move in an uncontrolled manner by providing double suspensions, safety scissors, casement stays.

Secure the window in front of inadvertent or unintentional opening and against falling.

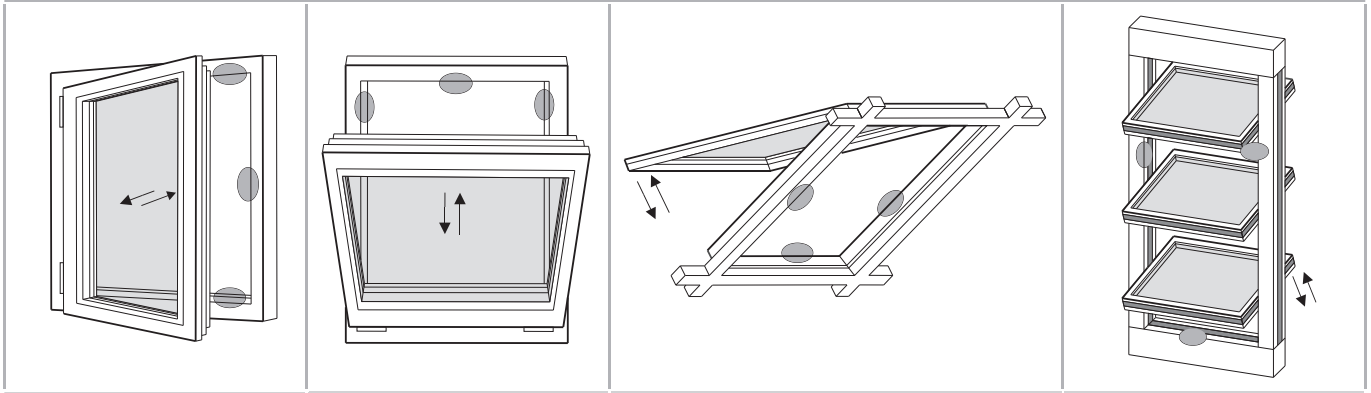
Bottom-hung windows must be provided with safety scissors or similar devices. Safety stays prevent damage and injuries to persons which might result from improper installation and handling.
The safety scissors must match the opening stroke of the drive (see technical data). This means: the opening width of the safety scissors must be greater than the drive stroke in order to avoid any blocking.



Mounting, Operation and Maintenance Instructions
These instructions shall allow professional assembly, commissioning and maintenance carried out by qualified and safety-minded electricians and/or skilled staff with in-depth knowledge of electrical and mechanical drive assembly.
To ensure safe operation and avoid damage and risks the system must be carefully assembled and adjusted according to these assembly instructions. All dimensions have to be verified at the place of installation and must be adjusted, if required.

Please note the connection assignment, the permissible drive voltage (see type plate), the minimum and maximum performance data (see technical data) and the assembly and installation notes and strictly adhere to them!
Never connect 24 V DC drives to 230 V supply!
Danger to life !

Danger spots by crush and shear points



Side-hung	Bottom-hung	Roof windows / skyskylight domes	Louvre windows

Danger spots: crush and shear points

Spare parts, fasteners, fittings and controllers
Only operate the drive with controllers built by the same manufacturer. There is no liability, warranty or customer service if third-party parts are used. If spare parts/fittings or extension parts are required, only original replacement parts from the manufacturer may be used.

Range of Application
Exclusively suited for the automatic opening and closing of the window types specified in these assembly instructions.
For any application not included in these instructions please consult the manufacturer or his authorized reseller for further information.

Do not misuse device for any other lifting operations.

Always check that your system complies with the applicable regulations. Special attention shall be given to opening width and opening area of the window, permissible fitting dimensions, opening time and opening speed, exerted forces, temperature resistance of drive/devices and cables as well as to the cross-section of the connection cable depending on the cable length and the power consumption.
Required fastening material shall be selected and, if necessary, completed to suit the drive and the exerted loads.

Make sure that all products installed are permanently protected from dirt and moisture unless the drive is expressly suited for use in damp or humid environments (see technical data).

Mounting and fastening material
Required or supplied fastening material shall be selected and, if necessary, supplemented to suit the building's structure and the corresponding strain.

Cable routing and electrical connection
Cable routing and electrical connections may only be carried out by approved contractors. Secure power supply lines 230 / 400V AC separately on site. Before working on the system the mains voltage supply and the emergency power supply (i. e. batteries) shall be disconnected in all poles and secured against unintended operation.
Never operate the drives, controllers, manual switches and sensors on operating voltages and connections contrary to the specifications in the operating instructions.
All relevant regulations must be observed for the installation:
Erection of power installations with rated voltages below 1000 V
Installation of cables and lines
Fire behaviour of building materials and building components

Specify suitable types of cable on consultation with the competent local authorities, energy supply companies and Employers' Liability Insurance Associations. Please pay especially regard to: All extra low-voltage lines (24 V DC) must be laid separately from power cables. Flexible lines must not be flush-mounted. Freely suspended lines must be provided with strain relief.

All lines must be laid such way that they can be neither sheared off, nor twisted or kinked during operation.

All junction boxes and external drive controllers must be positioned to allow access for maintenance work. The cable type, lengths and sizes must comply with the technical specifications. Check connection points for tight fit of the screwed connections and cable ends.

All 230 V components shall allow disconnection in all poles from the mains power supply prior to maintenance and repair work.

After mounting
and each modification to the structure, check all functions in a test run. Once the system is completely installed, the end-user must be instructed on all important operating steps. The end-user must also be notified of the remaining risks / hazards.

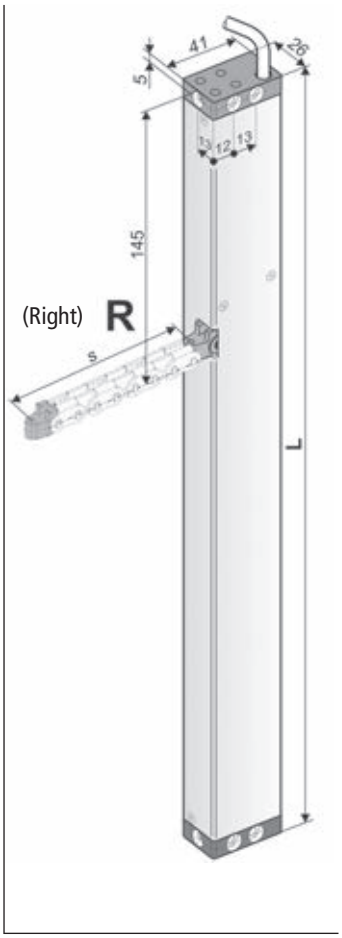
Ambient Conditions
The product must not be hit, dropped or exposed to vibrations, moisture, aggressive gases or other damaging environments unless it is approved for one or several of these ambient conditions by the manufacturer.

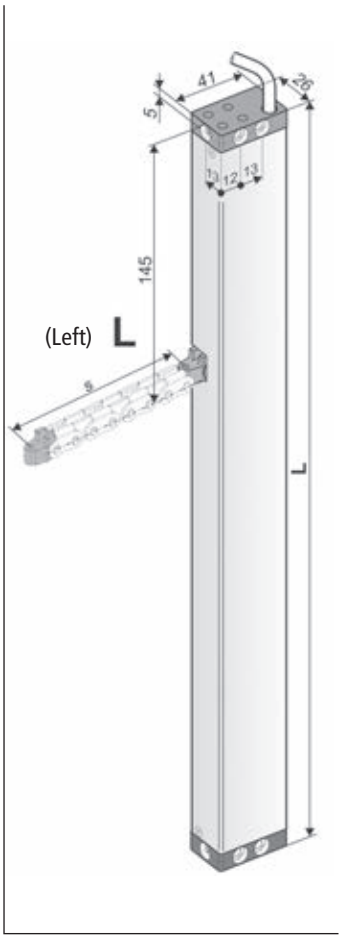
Accident prevention regulations and guidelines issued by the employers' liability insurance association
When working at, in or on a building or part of a building the specifications and notes of the respective accident prevention regulations (UVV) and the regulations and rules of the employers' liability insurance association (BGR) must be observed and adhered to.

Declaration of Incorporation
The devices are manufactured and tested in accordance with the European Directives. The appropriate declaration of incorporation has been issued. You may only operate the drive if there is a declaration of conformity within the meaning of the Machinery Directive for the entire system.

DATA SHEET KS2 S2 24V DC R/L

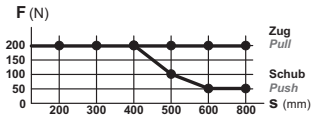
24V





- Application: Natural ventilation as single-drive
- Internal load dependend cut-off switch S2 in OPEN / CLOSE direction

TECHNICAL DATA

U_N	Rated voltage	24V DC (± 20 %), max. 2 Vpp
I_N	Rated current	0,5 A
I_A	Cut-off current	0,7 A
P_N	Rated power	12 W
ED	Duty cycle	30 % (ON: 3 min./OFF: 7 min.)
	Protection rating	IP 32
	Ambient temperature range	-5 °C ... +75 °C
F_Z	Pulling force max.	200 N
F_A	Pushing force	 s > 600 mm only for pulling application
F_H	Pullout force	1.800 N (fastening depended)
	Chain	Stainless steel
	Connecting cable	Non-halogen, grey 2 x 0,75 mm², ~ 3 m
v	Speed	10,0 mm/s 10,0 mm/s
s	Stroke	200 – 800 mm (± 5 %)
L	Length	see order data

OPTIONS

Special model	PU/pcs.	Part.-No.
Drive housing painted/powder coated in other RAL colours		
Specify at order stage:	1 – 4	**516004**
	5 – 9	**516004**
	10 – 49	**516004**
	50 – 99	**516004**
	up 100	**516004**
Extra length connecting cable:		
5 m – non-halogen, grey – 2 x 0,75 mm²		**501024**
10 m – non-halogen, grey – 2 x 0,75 mm²		**501026**

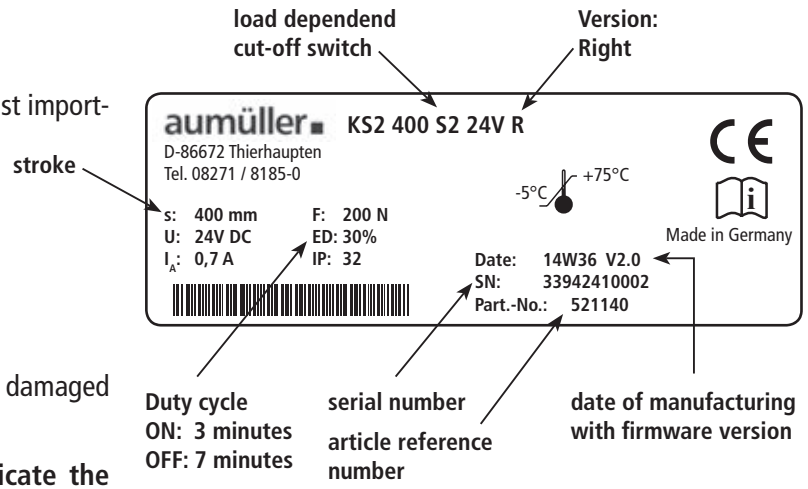
Order Data

s [mm]	L [mm]	Version	Finish	PU/pcs.	Part.-No.
200	335	KS2 200 S2 24V R (Right)	E6/C-0	1	**521120**
			RAL 9016	1	**1001521120**
		KS2 200 S2 24V L (Left)	E6/C-0	1	**521420**
			RAL 9016	1	**1001521420**
300	380	KS2 300 S2 24V R (Right)	E6/C-0	1	**521130**
			RAL 9016	1	**1001521130**
		KS2 300 S2 24V L (Left)	E6/C-0	1	**521430**
			RAL 9016	1	**1001521430**
400	430	KS2 400 S2 24V R (Right)	E6/C-0	1	**521140**
			RAL 9016	1	**1001521140**
		KS2 400 S2 24V L (Left)	E6/C-0	1	**521440**
			RAL 9016	1	**1001521440**
500	545	KS2 500 S2 24V R (Right)	E6/C-0	1	**521150**
			RAL 9016	1	**1001521150**
		KS2 500 S2 24V L (Left)	E6/C-0	1	**521450**
			RAL 9016	1	**1001521450**
600	545	KS2 600 S2 24V R (Right)	E6/C-0	1	**521160**
			RAL 9016	1	**1001521160**
		KS2 600 S2 24V L (Left)	E6/C-0	1	**521460**
			RAL 9016	1	**1001521460**
800	625	KS2 800 S2 24V R (Right)	E6/C-0	1	**521180**
			RAL 9016	1	**1001521180**
		KS2 800 S2 24V L (Left)	E6/C-0	1	**521480**
			RAL 9016	1	**1001521480**

EXPLANATIONS ON THE PRODUCT LABEL

The product label provides information on the most important caracteristics, such as:

- manufacturer's address
- article reference number and name
- technical caracteristics
- date of manufacturing with firmware version
- serial number

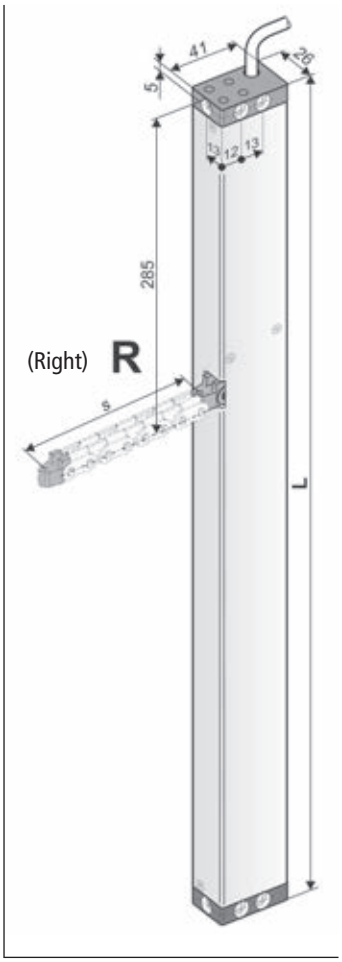


NOTE Never install and operate damaged products.

In the event of any complaints, please indicate the product serial number (SN) (see product label).

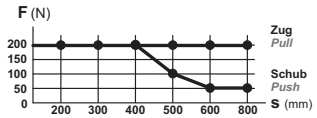
DATA SHEET KS2 S2 230V AC R/L

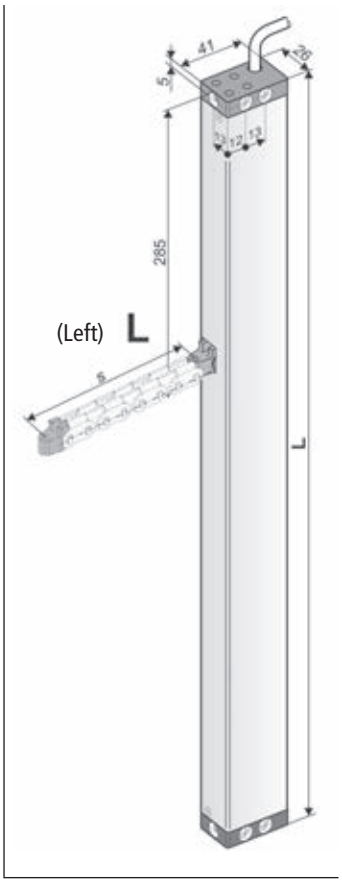
230V



- Application: Natural ventilation as single-drive
- Internal load dependend cut-off switch S2 in OPEN / CLOSE direction
- Parallel connection up to 8 drives in one group

TECHNICAL DATA

U_N	Rated voltage	230V AC (50 Hz)
I_N	Rated current	0,13 A
I_A	Cut-off current	0,2 A
P_N	Rated power	30 W
ED	Duty cycle	30 % (ON: 3 min./OFF: 7 min.)
	Protection rating	IP 32
	Ambient temperature range	-5 °C ... +60 °C
F_Z	Pulling force max.	200 N
F_A	Pushing force	 s > 600 mm only for pulling application
F_H	Pullout force	1.800 N (fastening depended)
	Chain	Stainless steel
	Connecting cable	Non-halogen, grey 6 x 0,75 mm², ~ 3 m
v	Speed	10,0 mm/s 10,0 mm/s
s	Stroke	200 – 800 mm (± 5 %)
L	Length	see order data



Order Data

s [mm]	L [mm]	Version	Finish	PU/pcs.	Part.-No.
200	475	KS2 200 S2 230V R (Right)	E6/C-0	1	**494920**
			RAL 9016	1	**1001494920**
		KS2 200 S2 230V L (Left)	E6/C-0	1	**494720**
			RAL 9016	1	**1001494720**
300	520	KS2 300 S2 230V R	E6/C-0	1	**494930**
			RAL 9016	1	**1001494930**
		KS2 300 S2 230V L	E6/C-0	1	**494730**
			RAL 9016	1	**1001494730**
400	570	KS2 400 S2 230V R	E6/C-0	1	**494940**
			RAL 9016	1	**1001494940**
		KS2 400 S2 230V L	E6/C-0	1	**494740**
			RAL 9016	1	**1001494740**
500	685	KS2 500 S2 230V R	E6/C-0	1	**494950**
			RAL 9016	1	**1001494950**
		KS2 500 S2 230V L	E6/C-0	1	**494750**
			RAL 9016	1	**1001494750**
600	685	KS2 600 S2 230V R	E6/C-0	1	**494960**
			RAL 9016	1	**1001494960**
		KS2 600 S2 230V L	E6/C-0	1	**494760**
			RAL 9016	1	**1001494760**
800	765	KS2 800 S2 230V R	E6/C-0	1	**494980**
			RAL 9016	1	**1001494980**
		KS2 800 S2 230V L	E6/C-0	1	**494780**
			RAL 9016	1	**1001494780**

OPTIONS

Special model	PU/pcs.	Part.-No.
Drive housing painted/powder coated in other RAL colours		
Specify at order stage:	1 – 4	**516004**
	5 – 9	**516004**
	10 – 49	**516004**
	50 – 99	**516004**
	up 100	**516004**
Extra length connecting cable:		
5 m – non-halogen, grey – 6 x 0,75 mm²		**501164**
10 m – non-halogen, grey – 6 x 0,75 mm²		**501166**

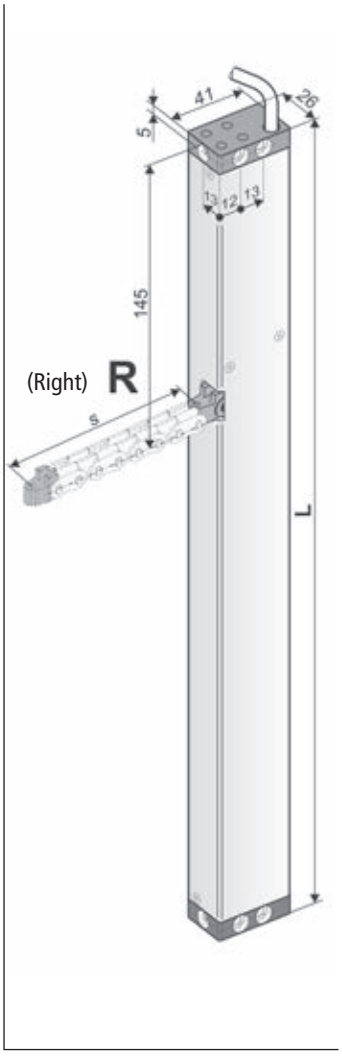
DATA SHEET KS2 S12 24V DC R

24V

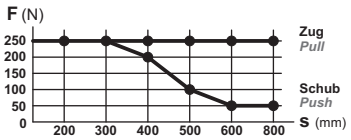
- Application: natural ventilation, SHEV, ferralux®-NSHEV
- Internal intelligent cut-off switch S12
- Z-Version: Programmable feedback limit position „OPEN“ and „CLOSE“ (max. 24V, 500 mA)

OPTIONS

- Programmable special functions
- M-COM for automatic synchronised run of multi drive systems and automatic sequence control with FV locking drives (S3/S12 SW V2)



TECHNICAL DATA

U_N	Rated voltage	24V DC (± 20 %), max. 2 Vpp
I_N	Rated current	0,7 A
I_A	Cut-off current	1,0 A
P_N	Rated power	17 W
ED	Duty cycle	30 % (ON: 3 min./OFF: 7 min.)
	Protection rating	IP 32
	Ambient temperature range	-5 °C ... +75 °C
F_Z	Pulling force max.	250 N
F_A	Pushing force	 s > 600 mm only for pulling application
F_H	Pullout force	1.800 N (fastening depended)
	Chain	Stainless steel
	Connecting cable	Non-halogen, grey 3 x 0,5 mm², ~ 3 m Z-Version: 5 x 0,5 mm² ~ 3 m
v	Speed	s < 400 8,0 mm/s 8,0 mm/s s 500 – 600 12,0 mm/s 8,0 mm/s s > 600 13,5 mm/s 8,0 mm/s
s	Stroke	200 – 800 mm (± 5 %)
L	Length	see order data

Order Data

s [mm]	L [mm]	Version	Finish	PU/pcs.	Part.-No.
200	335	KS2 200 S12 24V R (Right)	E6/C-0	1	**521620**
			RAL 9016	1	**1001521620**
		KS2 200 S12 24V R Z	E6/C-0	1	**521623**
			RAL 9016	1	**1001521623**
300	380	KS2 300 S12 24V R	E6/C-0	1	**521630**
			RAL 9016	1	**1001521630**
		KS2 300 S12 24V R Z	E6/C-0	1	**521633**
			RAL 9016	1	**1001521633**
400	430	KS2 400 S12 24V R	E6/C-0	1	**521640**
			RAL 9016	1	**1001521640**
		KS2 400 S12 24V R Z	E6/C-0	1	**521643**
			RAL 9016	1	**1001521643**
500	545	KS2 500 S12 24V R	E6/C-0	1	**521650**
			RAL 9016	1	**1001521650**
		KS2 500 S12 24V R Z	E6/C-0	1	**521653**
			RAL 9016	1	**1001521653**
600	545	KS2 600 S12 24V R	E6/C-0	1	**521660**
			RAL 9016	1	**1001521660**
		KS2 600 S12 24V R Z	E6/C-0	1	**521663**
			RAL 9016	1	**1001521663**
800	625	KS2 800 S12 24V R	E6/C-0	1	**521680**
			RAL 9016	1	**1001521680**
		KS2 800 S12 24V R Z	E6/C-0	1	**521683**
			RAL 9016	1	**1001521683**

OPTIONS

Special model	PU/pcs.	Part.-No.
Drive housing painted/powder coated in other RAL colours		
Specify at order stage:	1 – 4	**516004**
	5 – 9	**516004**
	10 – 49	**516004**
	50 – 99	**516004**
	up 100	**516004**
Extra length connecting cable:		
5 m – non-halogen, grey – 3 x 0,5 mm²		**501034**
10 m – non-halogen, grey – 3 x 0,5 mm²		**501036**
5 m – non-halogen, grey – 5 x 0,5 mm²		**501054**
10 m – non-halogen, grey – 5 x 0,5 mm²		**501056**
Microprocessor programming S12		
Electronic stroke reduction		**524190**
Special functions		**524180**
Optional accessories	PU/pcs.	Part.-No.
M-COM Comm. module for synchronised multi-drive systems	1	**524177**

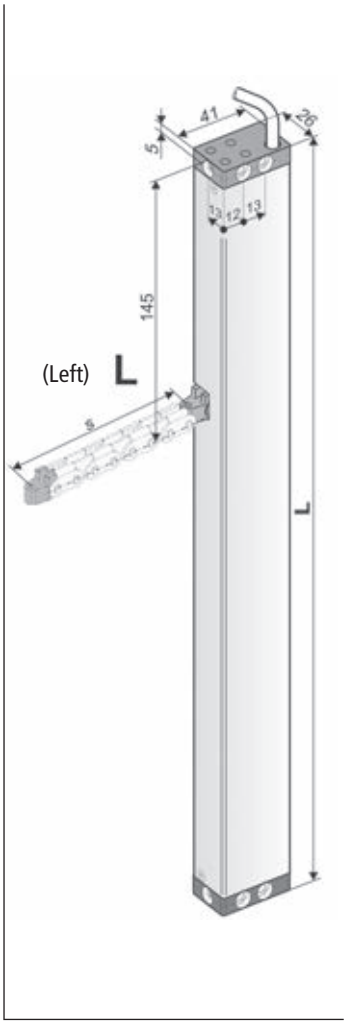
DATA SHEET KS2 S12 24V DC L

24V

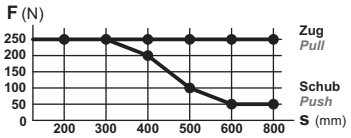
- Application: natural ventilation, SHEV, ferralux®-NSHEV
- Internal intelligent cut-off switch S12
- Z-Version: Programmable feedback limit position „OPEN“ and „CLOSE“ (max. 24V, 500 mA)

OPTIONS

- Programmable special functions
- M-COM for automatic synchronised run of multi drive systems and automatic sequence control with FV locking drives (S3/S12 SW V2)



TECHNICAL DATA

U_N	Rated voltage	24V DC (± 20 %), max. 2 Vpp
I_N	Rated current	0,7 A
I_A	Cut-off current	1,0 A
P_N	Rated power	17 W
ED	Duty cycle	30 % (ON: 3 min./OFF: 7 min.)
	Protection rating	IP 32
	Ambient temperature range	-5 °C ... +75 °C
F_Z	Pulling force max.	250 N
F_A	Pushing force	 s > 600 mm only for pulling application
F_H	Pullout force	1.800 N (fastening depended)
	Chain	Stainless steel (1.4310)
	Connecting cable	Non-halogen, grey 3 x 0,5 mm², ~ 3 m Z-Version: 5 x 0,5 mm² ~ 3 m
v	Speed	s < 400 8,0 mm/s 8,0 mm/s s 500 – 600 12,0 mm/s 8,0 mm/s s > 600 13,5 mm/s 8,0 mm/s
s	Stroke	200 – 800 mm (± 5 %)
L	Length	see order data

ORDER DATA

s [mm]	L [mm]	Version	Finish	PU/pcs.	Part.-No.
200	335	KS2 200 S12 24V L (Left)	E6/C-0	1	**521720**
			RAL 9016	1	**1001521720**
		KS2 200 S12 24V L Z	E6/C-0	1	**521723**
			RAL 9016	1	**1001521723**
300	380	KS2 300 S12 24V L	E6/C-0	1	**521730**
			RAL 9016	1	**1001521730**
		KS2 300 S12 24V L Z	E6/C-0	1	**521733**
			RAL 9016	1	**1001521733**
400	430	KS2 400 S12 24V L	E6/C-0	1	**521740**
			RAL 9016	1	**1001521740**
		KS2 400 S12 24V L Z	E6/C-0	1	**521743**
			RAL 9016	1	**1001521743**
500	545	KS2 500 S12 24V L	E6/C-0	1	**521750**
			RAL 9016	1	**1001521750**
		KS2 500 S12 24V L Z	E6/C-0	1	**521753**
			RAL 9016	1	**1001521753**
600	545	KS2 600 S12 24V L	E6/C-0	1	**521760**
			RAL 9016	1	**1001521760**
		KS2 600 S12 24V L Z	E6/C-0	1	**521763**
			RAL 9016	1	**1001521763**
800	625	KS2 800 S12 24V L	E6/C-0	1	**521780**
			RAL 9016	1	**1001521780**
		KS2 800 S12 24V L Z	E6/C-0	1	**521783**
			RAL 9016	1	**1001521783**

OPTIONS

Special model	PU/pcs.	Part.-No.
Drive housing painted/powder coated in other RAL colours		
Specify at order stage:	1 – 4	**516004**
	5 – 9	**516004**
	10 – 49	**516004**
	50 – 99	**516004**
	up 100	**516004**
Extra length connecting cable:		
5 m – non-halogen, grey – 3 x 0,5 mm²		**501034**
10 m – non-halogen, grey – 3 x 0,5 mm²		**501036**
5 m – non-halogen, grey – 5 x 0,5 mm²		**501054**
10 m – non-halogen, grey – 5 x 0,5 mm²		**501056**
Microprocessor programming S12		
Electronic stroke reduction		**524190**
Special functions		**524180**
Optional accessories	PU/pcs.	**Part.-No.**
M-COM Comm. module for synchronised multi-drive systems	1	**524177**

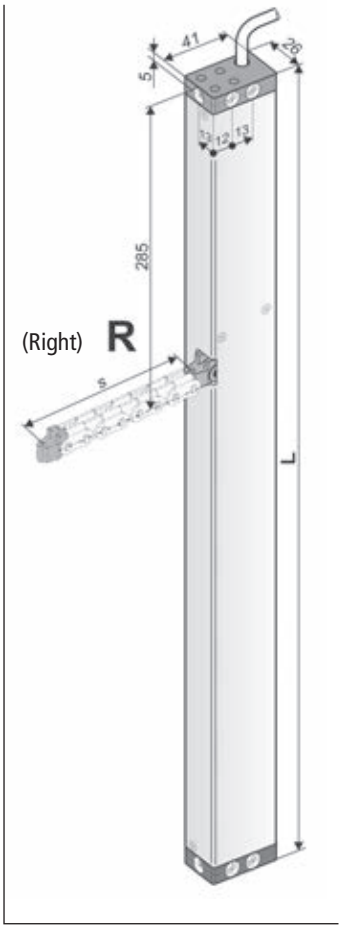
DATA SHEET KS2 S12 230V AC R

230V

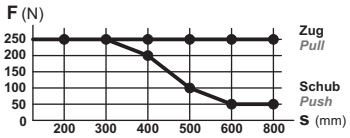
- Application: natural ventilation
- Internal intelligent cut-off switch S12
- Parallel connection up to 8 drives in one group
- Z-Version: Programmable feedback limit position „OPEN“ and „CLOSE“ (max. 24V, 500 mA)

OPTIONS

- Programmable synchronised run (max. 4 drives) and special functions



TECHNICAL DATA

U_N	Rated voltage	230V AC (50 Hz)
I_N	Rated current	0,13 A
I_A	Cut-off current	0,2 A
P_N	Rated power	30 W
ED	Duty cycle	30 % (ON: 3 min/OFF: 7 min.)
	Protection rating	IP 32
	Ambient temperature range	-5 °C ... +60 °C
F_Z	Pulling force max.	250 N
F_A	Pushing force	 s > 600 mm only for pulling application
F_H	Pullout force	1.800 N (fastening depended)
	Chain	Stainless steel
	Connecting cable	Non-halogen, grey 6 x 0,75 mm², ~ 3 m
v	Speed	8,0 mm/s 8,0 mm/s
s	Stroke	200 – 800 mm (± 5 %)
L	Length	see order data

ORDER DATA

s [mm]	L [mm]	Version	Finish	PU/pcs.	Part.-No.
200	475	KS2 200 S12 230V R (Right)	E6/C-0	1	**494020**
			RAL 9016	1	**1001494020**
		KS2 200 S12 230V R Z	E6/C-0	1	**494023**
			RAL 9016	1	**1001494023**
300	520	KS2 300 S12 230V R	E6/C-0	1	**494030**
			RAL 9016	1	**1001494030**
		KS2 300 S12 230V R Z	E6/C-0	1	**494033**
			RAL 9016	1	**1001494033**
400	570	KS2 400 S12 230V R	E6/C-0	1	**494040**
			RAL 9016	1	**1001494040**
		KS2 400 S12 230V R Z	E6/C-0	1	**494043**
			RAL 9016	1	**1001494043**
500	685	KS2 500 S12 230V R	E6/C-0	1	**494050**
			RAL 9016	1	**1001494050**
		KS2 500 S12 230V R Z	E6/C-0	1	**494053**
			RAL 9016	1	**1001494053**
600	685	KS2 600 S12 230V R	E6/C-0	1	**494060**
			RAL 9016	1	**1001494060**
		KS2 600 S12 230V R Z	E6/C-0	1	**494063**
			RAL 9016	1	**1001494063**
800	765	KS2 800 S12 230V R	E6/C-0	1	**494080**
			RAL 9016	1	**1001494080**
		KS2 800 S12 230V R Z	E6/C-0	1	**494083**
			RAL 9016	1	**1001494083**

OPTIONS

Special model	PU/pcs.	Part.-No.
Drive housing painted/powder coated in other RAL colours		
Specify at order stage:	1 – 4	**516004**
	5 – 9	**516004**
	10 – 49	**516004**
	50 – 99	**516004**
	up 100	**516004**
Extra length connecting cable:		
5 m – non-halogen, grey – 6 x 0,75 mm²		**501164**
10 m – non-halogen, grey – 6 x 0,75 mm²		**501166**
Microprocessor programming S12		
Synchronised multi-drive set functions		**495588**
Electronic stroke reduction		**495590**
Special functions		**524180**

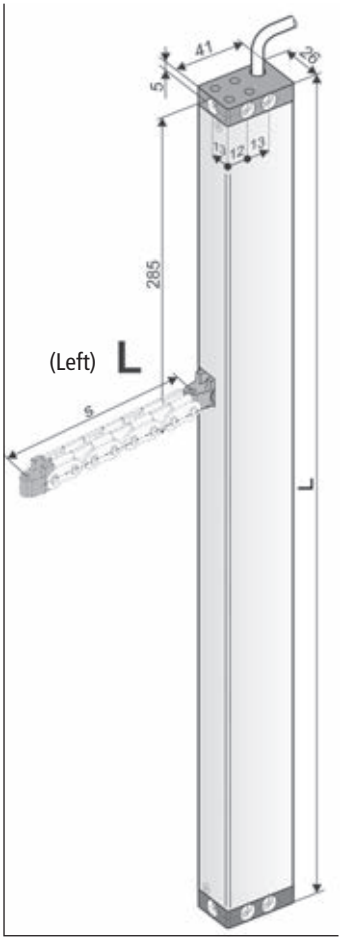
DATA SHEET KS2 S12 230V AC L

230V

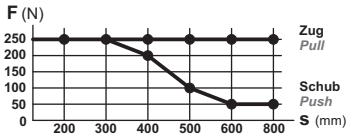
- Application: natural ventilation
- Internal intelligent cut-off switch S12
- Parallel connection up to 8 drives in one group
- Z-Version: Programmable feedback limit position „OPEN“ and „CLOSE“ (max. 24V, 500 mA)

OPTIONS

- Programmable synchronised run (max. 4 drives) and special functions



TECHNICAL DATA

U_N	Rated voltage	230V AC (50 Hz)
I_N	Rated current	0,13 A
I_A	Cut-off current	0,2 A
P_N	Rated power	30 W
ED	Duty cycle	30 % (ON: 3 min/OFF: 7 min.)
	Protection rating	IP 32
	Ambient temperature range	-5 °C ... +60 °C
F_Z	Pulling force max.	250 N
F_A	Pushing force	 s > 600 mm only for pulling application
F_H	Pullout force	1.800 N (fastening depended)
	Chain	Stainless steel (1.4310)
	Connecting cable	Non-halogen, grey 6 x 0,75 mm², ~ 3 m
v	Speed	8,0 mm/s 8,0 mm/s
s	Stroke	200 – 800 mm (± 5 %)
L	Length	see order data

ORDER DATA

s [mm]	L [mm]	Version	Finish	PU/pcs.	Part.-No.
200	475	KS2 200 S12 230V L (Left)	E6/C-0	1	**494120**
			RAL 9016	1	**1001494120**
		KS2 200 S12 230V L Z	E6/C-0	1	**494123**
			RAL 9016	1	**1001494123**
300	520	KS2 300 S12 230V L	E6/C-0	1	**494130**
			RAL 9016	1	**1001494130**
		KS2 300 S12 230V L Z	E6/C-0	1	**494133**
			RAL 9016	1	**1001494133**
400	570	KS2 400 S12 230V L	E6/C-0	1	**494140**
			RAL 9016	1	**1001494140**
		KS2 400 S12 230V L Z	E6/C-0	1	**494143**
			RAL 9016	1	**1001494143**
500	685	KS2 500 S12 230V L	E6/C-0	1	**494150**
			RAL 9016	1	**1001494150**
		KS2 500 S12 230V L Z	E6/C-0	1	**494153**
			RAL 9016	1	**1001494153**
600	685	KS2 600 S12 230V L	E6/C-0	1	**494160**
			RAL 9016	1	**1001494160**
		KS2 600 S12 230V L Z	E6/C-0	1	**494163**
			RAL 9016	1	**1001494163**
800	765	KS2 800 S12 230V L	E6/C-0	1	**494180**
			RAL 9016	1	**1001494180**
		KS2 800 S12 230V L Z	E6/C-0	1	**494183**
			RAL 9016	1	**1001494183**

OPTIONS

Special model	PU/pcs.	Part.-No.
Drive housing painted/powder coated in other RAL colours		
Specify at order stage:	1 – 4	**516004**
	5 – 9	**516004**
	10 – 49	**516004**
	50 – 99	**516004**
	up 100	**516004**
Extra length connecting cable:		
5 m – non-halogen, grey – 6 x 0,75 mm²		**501164**
10 m – non-halogen, grey – 6 x 0,75 mm²		**501166**
Microprocessor programming S12		
Synchronised multi-drive set functions		**495588**
Electronic stroke reduction		**495590**
Special functions		**524180**

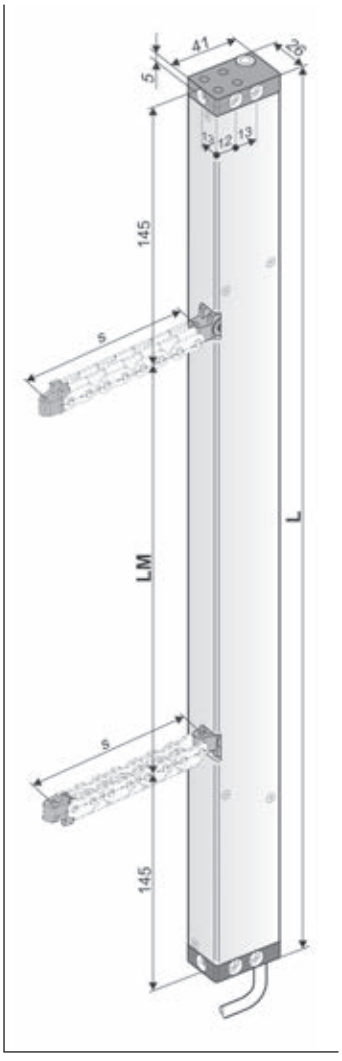
DATA SHEET KS2 TWIN S12 24V DC

24V

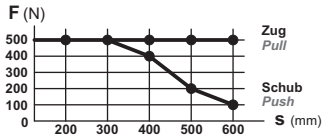
- Application: natural ventilation, RWA
- Internal intelligent cut-off switch S12
- Z-Version: Programmable feedback limit position „OPEN“ and „CLOSE“ (max. 24V, 500 mA)

OPTIONS

- Programmable special functions
- M-COM for automatic synchronised run of multi drive systems and automatic sequence control with FV locking drives (S3/S12 SW V2)



TECHNICAL DATA

U_N	Rated voltage	24V DC (± 20 %), max. 2 Vpp
I_N	Rated current	1,4 A
I_A	Cut-off current	2,0 A
P_N	Rated power	34 W
ED	Duty cycle	30 % (ON: 3 min/OFF: 7 min.)
	Protection rating	IP 32
	Ambient temperature range	-5 °C ... +75 °C
F_Z	Pulling force max.	500 N
F_A	Pushing force	
F_H	Pullout force	1.800 N (fastening depended)
	Chain	Stainless steel
	Connecting cable	Non-halogen, grey 3 x 0,5 mm², ~ 3 m Z-Version: 5 x 0,5 mm² ~ 3 m
v	Speed	s < 400 8,0 mm/s 8,0 mm/s s 500 – 600 12,0 mm/s 8,0 mm/s
s	Stroke	200 – 600 mm (± 5 %)
L	Length	see order data
LM	Distance in between chains	see order data

Order Data

s [mm]	L [mm]	LM [mm]	Version	Finish	PU/pcs.	Part.-No.
200	640	350	KS2 TWIN 200 S12 24V	E6/C-0	1	**521820**
			KS2 TWIN 200 S12 24V Z	E6/C-0	1	**521823**
400	830	540	KS2 TWIN 400 S12 24V	E6/C-0	1	**521840**
			KS2 TWIN 400 S12 24V Z	E6/C-0	1	**521843**
500	1060	770	KS2 TWIN 500 S12 24V	E6/C-0	1	**521850**
			KS2 TWIN 500 S12 24V Z	E6/C-0	1	**521853**
600	1060	770	KS2 TWIN 600 S12 24V	E6/C-0	1	**521860**
			KS2 TWIN 600 S12 24V Z	E6/C-0	1	**521863**

OPTIONS

Special model	PU/pcs.	Part.-No.
Drive housing painted/powder coated in other RAL colours		
Specify at order stage:	1 – 4	**516004**
	5 – 9	**516004**
	10 – 49	**516004**
	50 – 99	**516004**
	up 100	**516004**
Extra length connecting cable:		
5 m – non-halogen, grey – 3 x 0,5 mm²		**501034**
10 m – non-halogen, grey – grau 3 x 0,5 mm²		**501036**
5 m – non-halogen, grey – 5 x 0,5 mm²		**501054**
10 m – non-halogen, grey – 5 x 0,5 mm²		**501056**
Microprocessor programming S12		
Elektronische Strokeverkürzung (Antriebe 24V DC)		**524190**
Special functions		**524180**
Optional accessories	PU/pcs.	Part.-No.
M-COM Comm. module for synchronised multi-drive systems	1	**524177**

DATA SHEET KS2 S12 230V AC TANDEM-SET

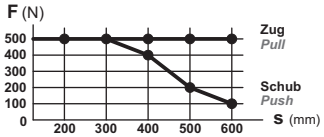
230V

- Application: natural ventilation
- Factory-configured set includes:
  Master: KS2 S12 230V AC R/L with voltage output 24V DC
  Slave: KS2 S12 24V DC R/L with conection cable on the motor side
  KS2 S12 24V DC L-K with conection cable on the chain side
- Sequence control with FV locking drives (S3/S12 SW V2)
- Parallel connection up to 8 sets of drives in one group
- Junction box to be site supplied

OPTIONS:

- Programmable special functions and sequence control with FV locking drives (S3/S12 SW V2)
- Screw terminal connections in drive housing upon request

TECHNICAL DATA

U_N	Rated voltage	230V AC (50 Hz)
I_N	Rated current	0,15 A
I_A	Cut-off current	0,2 A
P_N	Rated power	35 W
ED	Duty cycle	30 % (ON: 3 min./OFF: 7 min.)
	Protection rating	IP 32
	Ambient temperature range	-5 °C ... +60 °C
F_Z	Pulling force max.	2 x 250 N
F_A	Pushing force	 s > 600 mm only for pulling application
F_H	Pullout force	1.800 N (fastening depended)
	Chain	Stainless steel
	Connecting cable	Master: Non-halogen, grey 6 x 0,75 mm², ~ 3 m 3 x 0,5 mm², ~ 3 m Slave: Non-halogen, grey 3 x 0,5 mm², ~ 3 m
v	Speed	8,0 mm/s 8,0 mm/s
s	Stroke	200 – 800 mm (± 5 %)
L	Length	see order data

ORDER DATA

s [mm]	L [mm]	Version	Finish	PU/pcs.	Part.-No.
200	475	KS2 200 S12 230V Set A (R/R)	E6/C-0	1	**494220**
			RAL 9016	1	**1001494220**
		KS2 200 S12 230V Set B (L/L)	E6/C-0	1	**494320**
			RAL 9016	1	**1001494320**
		KS2 200 S12 230V Set C (R/L-K)	E6/C-0	1	**494420**
			RAL 9016	1	**1001494420**
300	520	KS2 300 S12 230V Set A (R/R)	E6/C-0	1	**494230**
			RAL 9016	1	**1001494230**
		KS2 300 S12 230V Set B (L/L)	E6/C-0	1	**494330**
			RAL 9016	1	**1001494330**
		KS2 300 S12 S 230V et C (R/L-K)	E6/C-0	1	**494430**
			RAL 9016	1	**1001494430**
400	570	KS2 400 S12 230V Set A (R/R)	E6/C-0	1	**494240**
			RAL 9016	1	**1001494240**
		KS2 400 S12 230V Set B (L/L)	E6/C-0	1	**494340**
			RAL 9016	1	**1001494340**
		KS2 400 S12 230V Set C (R/L-K)	E6/C-0	1	**494440**
			RAL 9016	1	**1001494440**
500	685	KS2 500 S12 230V Set A (R/R)	E6/C-0	1	**494250**
			RAL 9016	1	**1001494250**
		KS2 500 S12 230V Set B (L/L)	E6/C-0	1	**494350**
			RAL 9016	1	**1001494350**
		KS2 500 S12 230V Set C (R/L-K)	E6/C-0	1	**494450**
			RAL 9016	1	**1001494450**
600	685	KS2 600 S12 230V Set A (R/R)	E6/C-0	1	**494260**
			RAL 9016	1	**1001494260**
		KS2 600 S12 230V Set B (L/L)	E6/C-0	1	**494360**
			RAL 9016	1	**1001494360**
		KS2 600 S12 230V Set C (R/L-K)	E6/C-0	1	**494460**
			RAL 9016	1	**1001494460**
800	765	KS2 800 S12 230V Set A (R/R)	E6/C-0	1	**494280**
			RAL 9016	1	**1001494280**
		KS2 800 S12 230V Set B (L/L)	E6/C-0	1	**494380**
			RAL 9016	1	**1001494380**
		KS2 800 S12 230V Set C (R/L-K)	E6/C-0	1	**494480**
			RAL 9016	1	**1001494480**

OPTIONS

Special model	PU/pcs.	Part.-No.
Drive housing painted/powder coated in other RAL colours		
Specify at order stage:		**516004**
Extra length connecting cable:		
5 m – non-halogen, grey – 6 x 0,75 mm²		**501164**
10 m – non-halogen, grey – 6 x 0,75 mm²		**501166**
5 m – non-halogen, grey – 3 x 0,5 mm²		**501034**
10 m – non-halogen, grey – 3 x 0,5 mm²		**501036**
Microprocessor programming S12		
Synchronised multi-drive set functions		**495588**

Intended use

Area of Application / Range of Application

These chain drives are used for electromotive opening and closing of windows in facades and roofs, with a mounting height (lower edge of moving element) of at least 2.5 meters from the floor, for natural smoke and heat exhaust (NSHEV/ SHEV) and for natural ventilation.

The main purpose of this product is to help save life in the event of a fire and to ensure the supply of fresh air in the building.

The safety features of this product are crucial for compliance with the Machinery Directive 2006/42/EC as well as standards EN 12101-2.

The most important requirement is that the window opens after:

- activation via a control unit (SHEV unit)
  - from a fire alarm button
  - from a smoke detector or
  - from the fire alarm system (FAS).

Casement type:
roof window / skylight dome / bottom-hung casement, top-hung casement, side-hung casement / parallel opening casement.
Made of base materials such as aluminum, plastic or wood.

24V **230V**

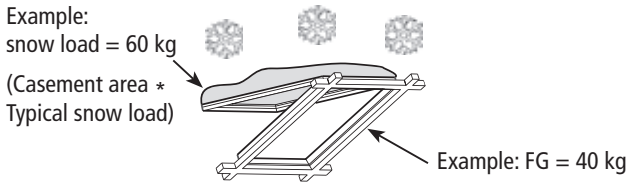
Opening direction:
inward and outward opening

All specified casement sizes shall be a guide only.
The actual application area depends on the ratio between: FAB/FAH, total casement weight and opening width. Strictly adhere to the **force-path-diagrams** of the drives.

For different drive mounting positions on the casement the following points must be considered:

- Total weight of casement (glass + frame)
- Casement size (FAB x FAH)
- Snow load (based on snow zone / area of use)
- Roof pitch angle (important for snow load calculation)
- Wind force (influence of side wind)
- Required cross-section of aperture (geometric or aerodynamic)
- Required force and stroke of drive/s

Snow load on roof windows for SHEV-systems



Example calculation
Establish snow loading based on national standards /directives
(in Germany according to DIN 1055-5)
total weight = FG + snow load
total weight = (40 kg + 60 kg) = 100 kg

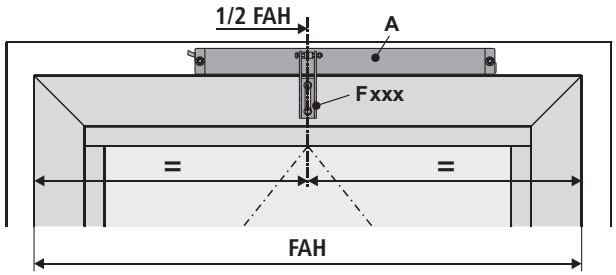
Drive positioning: Symmetrical or asymmetrical

Drive positioning: Symmetrical

Symmetrical linkage of casement bracket or frame bracket should always be preferred to an asymmetrical one.

Advantage:

- for a Tandem-drive application, combination of drives in R / L version can be used
- uniform force transmission to the window
- uniform casement pressure (tightness)

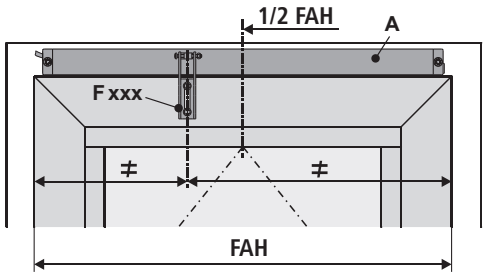


Drive positioning: Asymmetrical

Asymmetrical linkage of casement bracket or frame bracket can be used in case of lack of space on the window frame / casement.

Check:

- unequal force transmission to the window
- window statics allows unequal force distribution
- unequal casement pressure (tightness)



SURVEY: GROWING VARIANTS AND MINIMUM CASEMENT HEIGHTS

24V **230V**

Growing variants: Bottom-hung windows with tensile load

Casement assembly Drive ride-on inward opening

Frame bracket: **K94** Casement bracket: **F21** **Drive fixed** **Space** on the frame min. **16** mm	Frame bracket: **K94** Casement bracket: **F21** **Drive fixed** **Space** on the frame min. **21** mm	Frame bracket: **K129** Casement bracket: **F21** **Drive fixed** **Space** on the frame min. **25** mm
Stroke / **FAH min.**	**Stroke** / **FAH min.**	**Stroke** / **FAH min.**
200 325	**200** 325	**200** 325
300 500	**300** 450	**300** 450
400 750	**400** 550	**400** 550
500 975	**500** 675	**500** 675
600 1200	**600** 800	**600** 800
800 1600	**800** 1080	**800** 1080
See chapter **INSTALLATION STEP: 5A**	See chapter **INSTALLATION STEP: 5A**	See chapter **INSTALLATION STEP: 5A**

Frame assembly Drive stationary inward opening

Frame bracket: - Casement bracket: **F120** **Drive fixed** **Space** on the frame min. **28** mm	Frame bracket: - Casement bracket: **F95** **Drive fixed** **Space** on the frame min. **28** mm	Frame bracket: **K96-1** Casement bracket: **F95** **Drive swiveling** **Space** on the frame min. **30** mm
Stroke / **FAH min.**	**Stroke** / **FAH min.**	**Stroke** / **FAH min.**
200 425	**200** 425	**200** 250
300 500	**300** 500	**300** 325
400 600	**400** 600	**400** 400
500 775	**500** 775	**500** 500
600 950	**600** 950	**600** 600
800 1250	**800** 1250	**800** 800
See chapter **INSTALLATION STEP: 5B**	See chapter **INSTALLATION STEP: 5B**	See chapter **INSTALLATION STEP: 5C**

Frame assembly Drive stationary outward opening

Frame bracket: **K94** Casement bracket: **F21** **Drive fixed** **Space** on the frame min. **22** mm
Stroke / **FAH min.**
200 325
300 450
400 550
500 675
600 800
800 1080
See chapter **INSTALLATION STEP: 5D**

Growing variants: Top-hung windows with pressure load

Frame assembly Drive stationary outward opening

Frame bracket: **K130** Casement bracket: **F21** **Drive fixed** **Space** on the frame min. **22** mm
Stroke / **FAH min.**
200 350
300 400
400 450
500 600
600
800
See chapter **INSTALLATION STEP: 5E**

Frame assembly Drive stationary outward opening

Frame bracket: **K94** Casement bracket: **F21** **Drive fixed** **Space** on the frame min. **22** mm	Frame bracket: **K94** Casement bracket: **F21** **Drive fixed** rotated **Space** on the frame min. **22** mm	Frame bracket: **K128** Casement bracket: **F21** **Drive fixed** **AWS 57 RO** Schüco
Stroke / **FAH min.**	**Stroke** / **FAH min.**	**Stroke** / **FAH min.**
200 350	**200** 400	**200** 450
300 400	**300** 500	**300** 500
400 450	**400** 700	**400** 550
500 600	**500** 800	**500** 700
600	**600**	**600**
800	**800**	**800**
See chapter **INSTALLATION STEP: 5F**	See chapter **INSTALLATION STEP: 5G**	See chapter **INSTALLATION STEP: 5H**

Frame assembly Drive stationary inward opening

Frame bracket: - Casement bracket: **F120** **Drive fixed** **Space** on the frame min. **28** mm	Frame bracket: - Casement bracket: **F95** **Drive fixed** **Space** on the frame min. **28** mm
Stroke / **FAH min.**	**Stroke** / **FAH min.**
200 350	**200** 350
300 400	**300** 400
400 450	**400** 450
500 700	**500** 700
600	**600**
800	**800**
See chapter **INSTALLATION STEP: 5I**	See chapter **INSTALLATION STEP: 5I**

Window assembly Drive ride-on inward opening

Frame bracket: **K94** Casement bracket: **F21** **Drive fixed** **Space** on the frame min. **16** mm
Stroke / **FAH min.**
200 350
300 400
400 450
500 600
600
800
See chapter **INSTALLATION STEP: 5J**

Transom assem. Drive stationary inward opening

Frame bracket: **K93** Casement bracket: **F21** **Drive fixed**
Stroke / **FAH min.**
200 350
300 400
400 450
500 600
600
800
See chapter **INSTALLATION STEP: 5K**

Values are determined in:
Casement weight: max. 30 kg/m²
Casement width: max. 1200 mm (with 1 drive)
Window overlap: 10 mm

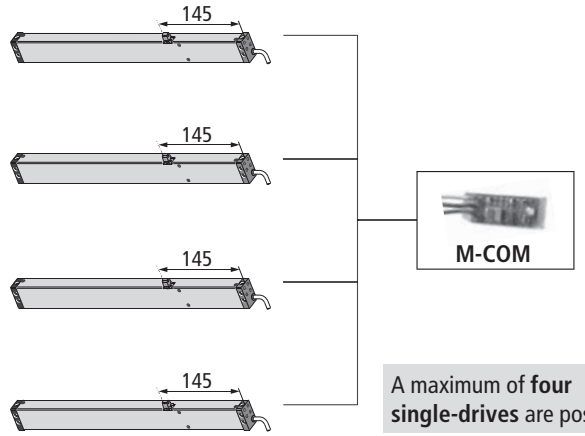
POSSIBLE MULTI-DRIVE OPERATING WITH M-COM

24V 230V

Possible multi-drive operating of KS2 S12 in 24V DC with M-COM — 24V

Multi-drive operating — Version: Right

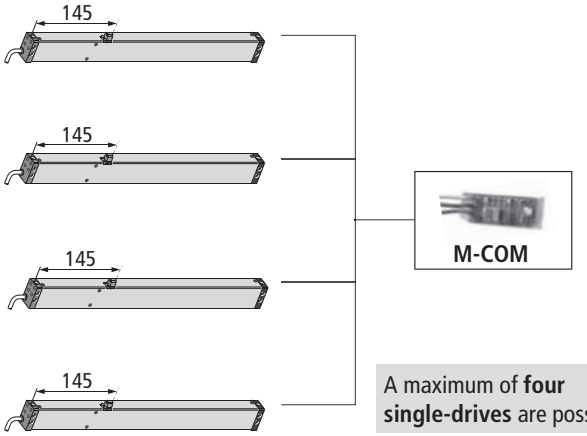
Configuration multi-drive operating with M-COM



A maximum of **four single-drives** are possible.

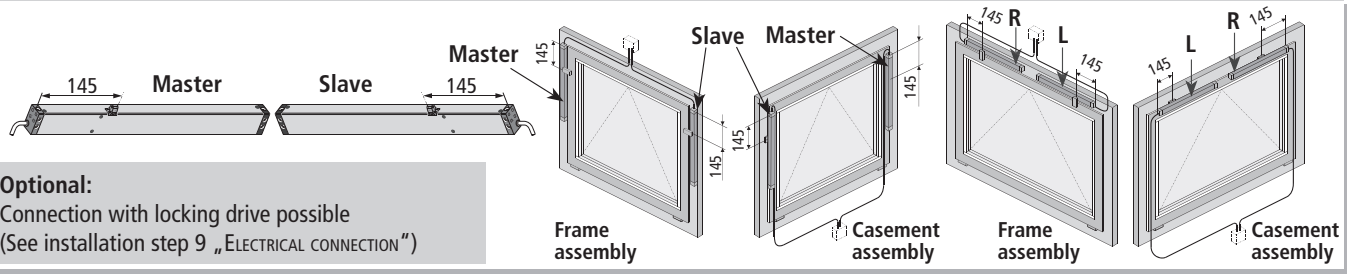
Multi-drive operating — Version: left

Configuration multi-drive operating with M-COM



A maximum of **four single-drives** are possible.

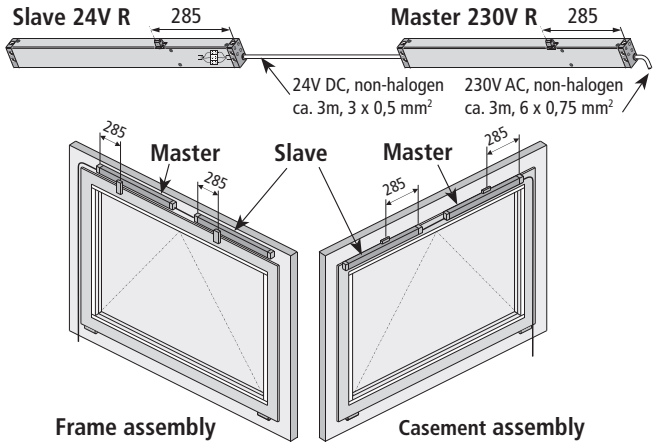
Multi-drive operating — Combination: Right + Left



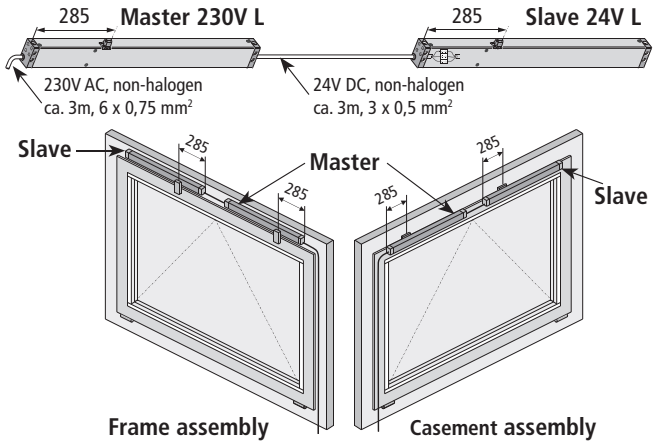
Optional:
Connection with locking drive possible
(See installation step 9 „ELECTRICAL CONNECTION")

Possible multi-drive operating of KS2 S12 in 230V AC — 230V

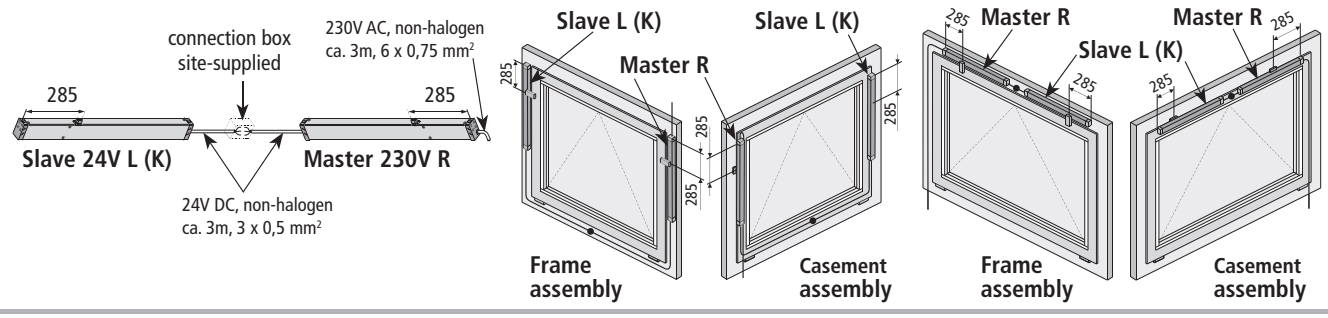
Multi-drive operating — Set A (Version: Right)



Multi-drive operating — Set B (Version: left)



Multi-drive operating — Set C (Combination: Master R + Slave L (K))



INSTALLATION STEP 1: PRE-ASSEMBLY CHECKS

24V 230V

⚠ WARNING

Fully observe all instructions !
Incorrect assembly may lead to serious injuries!

Storage of the drives on site prior to the assembly.
Protective measures against damage, dust, moisture or contamination must be taken. Only store the drives in dry and well ventilated places before installation.

Testing the drives prior to installation
Check the drives prior to installation for their good mechanical condition and completeness. The chains / spindles form the drives must move smoothly in and out.
We recommend the use of our test kit for drives in 24V = / 230V~ (see table below).
Never install and operate damaged products. Drives must always be tested on a non-slip and stable surface or in a test fixture. Do not interfere in the test element during the operational test. The testing shall be performed under the supervision of specialist staff.
When mounting the chain drive, ensure the chain moves in and out in an approx. 90 degree angle.

Test kit for drives	
Order number:	**533981**
Application:	Test kit to check running direction and communication of drives 24V DC or 230V AC (including batteries)
Supply voltage:	230V AC
Drive types:	24V DC / 230V AC
Drive current:	max. 3 A
Display:	drive current, battery charge
Ambient temperature:	-5 °C ... + 75 °C
Plastic housing:	250 x 220 x 210 mm
Weight:	approx. 3,6 kg
Feature / equipment:	Control elements: 2 switches + 1 button

Instructions on intended use
Ensure that the use of the drives is in accordance with the specified range of application/ area of application. In particular, check that the temperature range marked on the drive is suitable for the local installation conditions.
Any other use of the products causes loss of warranty. The end-user must be informed about the intended use of the drives. In particular, it must be pointed out to the end-user that - apart from pressure and tensile forces in opening / closing direction - no additional forces should act on the spindle, chain or lever of the drives. Additional warning signs might be required.

Predictable Misuse
It is absolutely essential to avoid any foreseeable misuse of the drives! Some examples:
- do not connect 24V DC directly to 230V AC
- observe synchronization for tandem drive operation
- installation of drives in the indoor area only
- any other action of forces

Check installation requirements
- Are the supporting surfaces and the structural conditions adequate for the load transfer?
- Is an additional supporting structure required?
- Have sufficient measures been taken to avoid thermal bridges (thermal separation) at the contact points?
- Is there sufficient space for the drive swivel motion?

If not, the operator must be notified of these requirements!

Information on the Load Transfer
The supporting surfaces of the frame brackets and casement brackets must fully rest on the window or frame profile. Tilting movements of the mounting elements when locking and unlocking the casement are not allowed. Safe and firm mounting on the window profile must be ensured.

⚠ CAUTION

It is absolutely necessary to observe the necessary drive swivelling range. If this can not be ensured, another fastening or another drive type must be chosen.

INSTALLATION STEP 2:
PREREQUISITES FOR ASSEMBLY / PREPARING ASSEMBLY

24V 230V

WARNING **Important instructions for safe assembly:** Fully observe all instructions, incorrect assembly may lead to serious injuries.

Prerequisites for Assembly

When installing a "Partly completed machine - drive", the following requirements must be met in order to allow correct assembly with other components to produce a complete machine without compromising health and safety of people:

1. Choose suitable drive type.
2. Select suitable fastening material (casement bracket, frame brackets) and adhere to the profile-specific hole layout.
3. There must be adequate space on the frame and on the casement to accommodate a drive.
4. Before installing check that the window is in a faultless mechanical condition.
   It should open and close easily.
5. The fasteners to be selected for fastening the drive to the window must be compatible with the window material (see table).

Wood windows	wood screws: i.e. DIN 96, DIN 7996, DIN 571 with head-type: round head with slot, round head with cross, hex head,special type	
steel, stainless steel, aluminum windows	self-tapping screws, thread screws, sheet-metal screws i.e. ISO 4762, ISO 4017, ISO 7049 , ISO 7085, DIN 7500 with head-type: cylinder head with hex socket, internal serration (Torx), Phillips head or external hex head blind rivet nut	
plastic windows	screws for plastic i.e. DIN 95606, DIN 95607, ISO 7049, ISO 7085, DIN 7500 with head-type: round head with cross, external hex head, Torx	Recommendation: if possible, screw through two cavity webs

Preparing assembly

Check window size on site.

- Measure FAB and FAH.
- possibly establish the weight of casement or consult our specialized staff.

Tools required

- Marker
- Grains
- Hammer
- Knife
- Screwdriver (cross, Torx)
- Hexagonal wrench
- Torque wrench
- Power drill
- Threadlock adhesive
- possibly a tool for blind rivet nuts

Scope of delivery:

Prior to assembly, check that delivered products are complete.

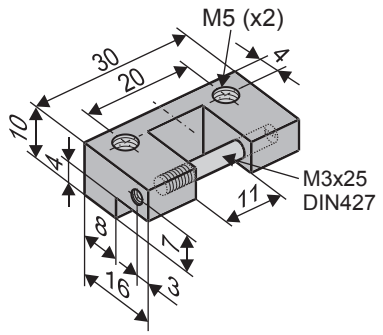
Accessories for chain drive	
	Assembly and Commissioning Instructions (german and english)
	Warning sign sticker „Risk of entrapment" (1x)

Installation step 3: Determine the casement brackets

24V 230V

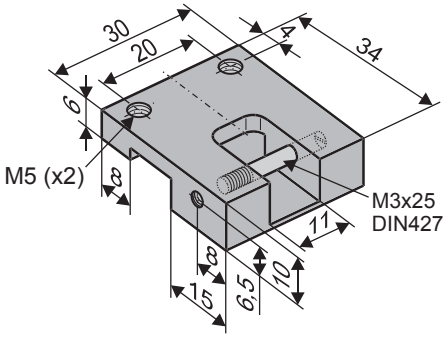
Hole layout for casement brackets

Casement bracket F17



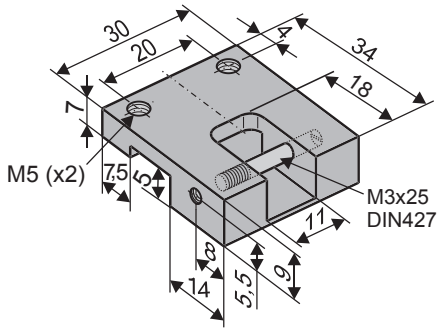
use with K105

Casement bracket F18



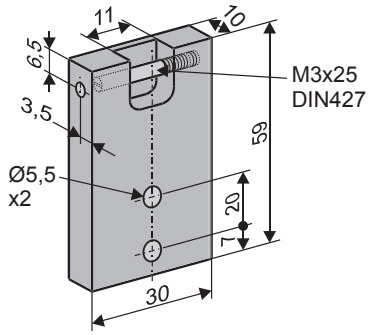
use with K105

Casement bracket F18-1



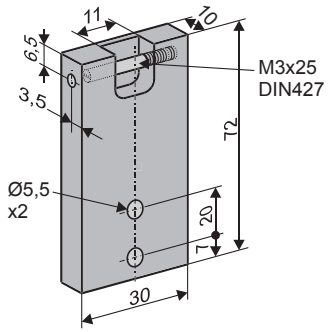
use with K105

Casement bracket F19



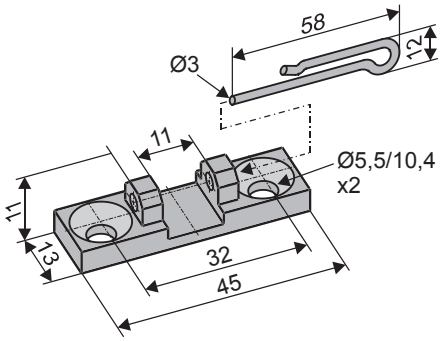
use with K105

Casement bracket F20



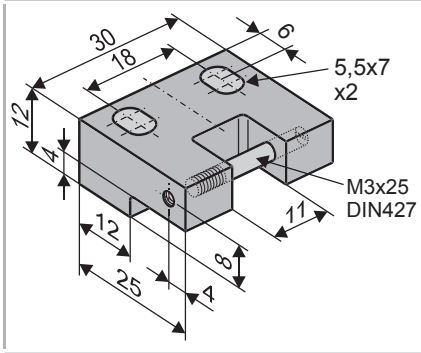
use with K105

Casement bracket F21



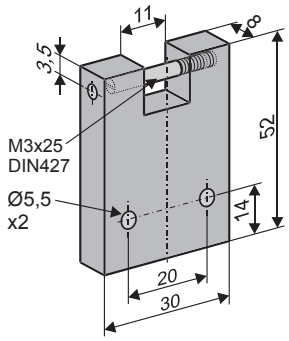
use with K93, K94, K129, K130 (B1, K128)

Casement bracket F35



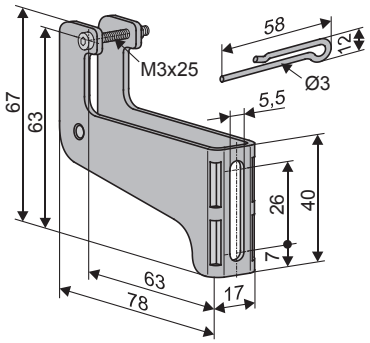
use with K93, K94, K129, K130

Casement bracket F37



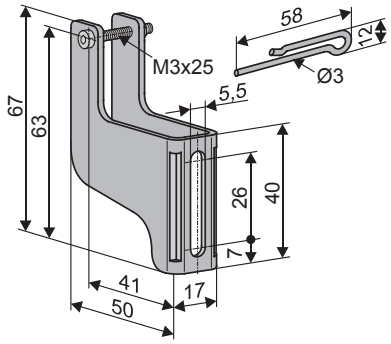
use with K93, K94, K129, K130

Casement bracket F95



use with K96

Casement bracket F120



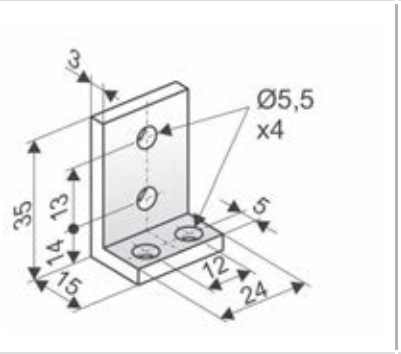
Depending on the profile design, different fitting brackets and fixings are often used. General fitting details for standard systems are illustrated on the following pages.
Separate project drawings can be supplied on request.

Installation step 4: Determine the frame brackets

24V **230V**

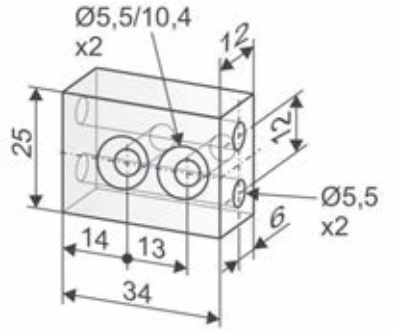
Hole layout for frame brackets

Frame bracket K105-B



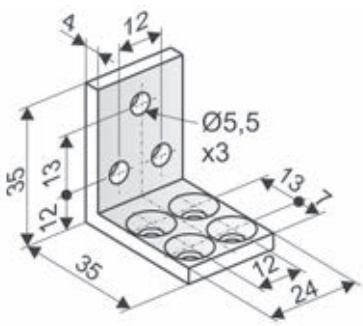
use with F17, F18, F19, F20

Frame bracket K105-A



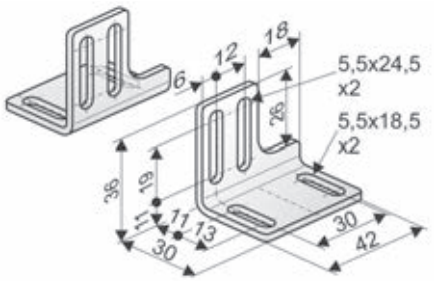
use with **F17** (FAH min. 700 mm)

Frame bracket K106



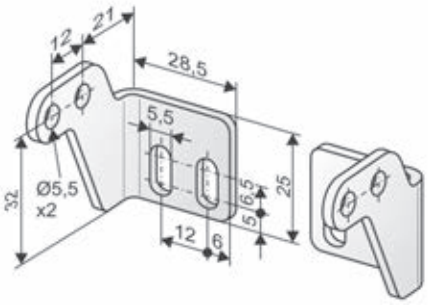
use with **F19** FAH min.700mm **F20** FAH min.500mm

Frame bracket K93



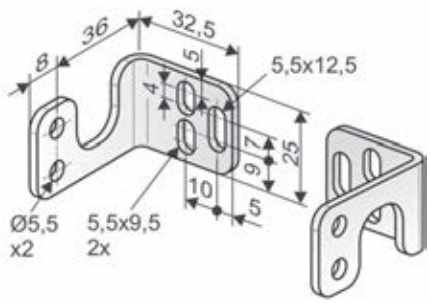
use with F21

Frame bracket K94



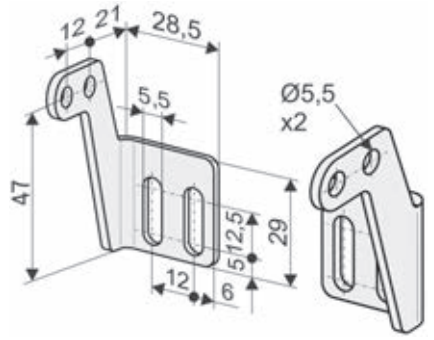
use with F21, F35, F37

Frame bracket K96-1



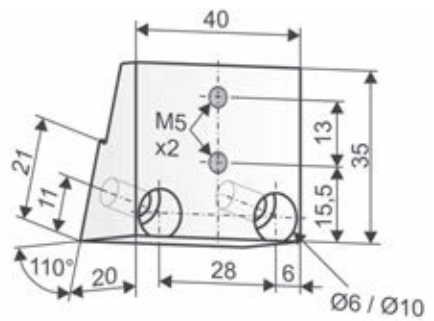
use with F95

Frame bracket K129



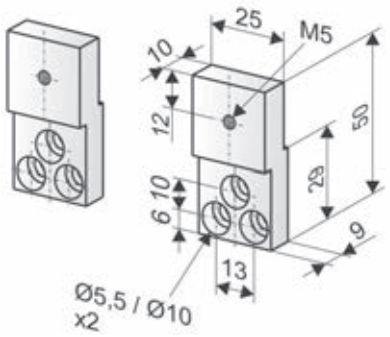
use with F21, F35, F37

Frame bracket K128



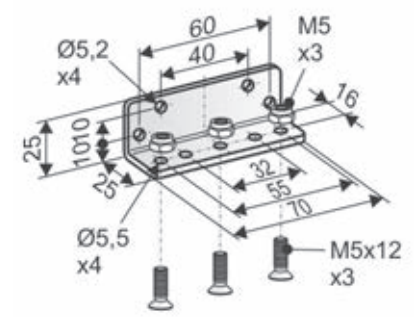
roof window Schüco AWS 57RO

Frame bracket K130



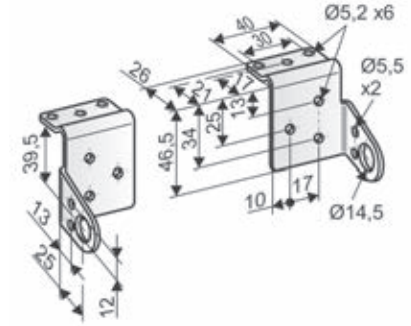
friction hinged window Schüco AWS102 SK

Frame bracket B1



in skylight dome use with F21 and K125

Frame bracket K125



on skylight dome use with B1 and F21

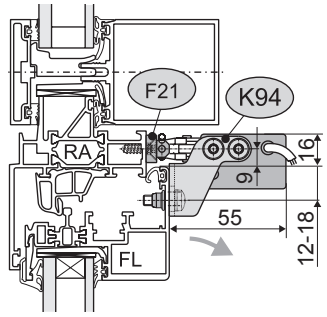
aumüller

APPLICATION EXAMPLES

24V 230V

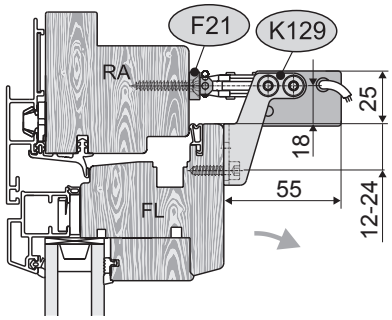
Application examples on windows

Bottom-hung inward opening Casement assembly



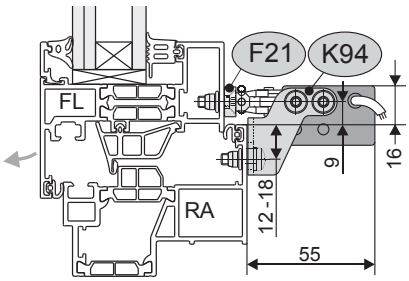
Detail of mounting on aluminium window

Bottom-hung inward opening Casement assembly



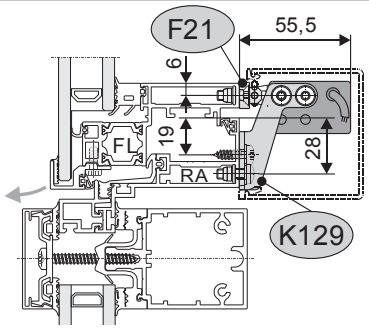
Detail of mounting on alu-wooden window

Top-hung outward opening Frame assembly



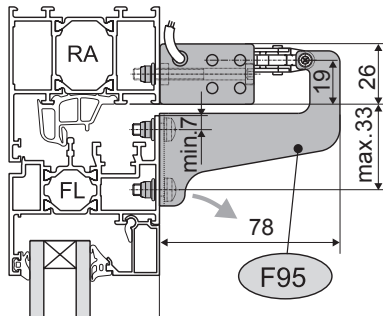
Detail of mounting on aluminium window

Top-hung outward opening Frame assembly



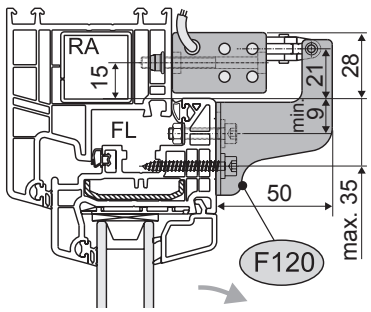
Detail of mounting on aluminium window

Bottom-hung inward opening Frame assembly



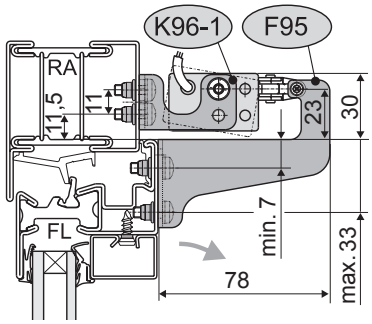
Detail of mounting on aluminium window

Bottom-hung inward opening Frame assembly



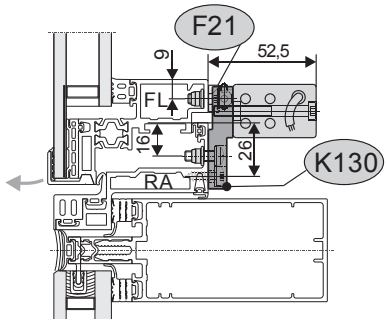
Detail of mounting on PVC window

Bottom-hung inward opening Frame assembly



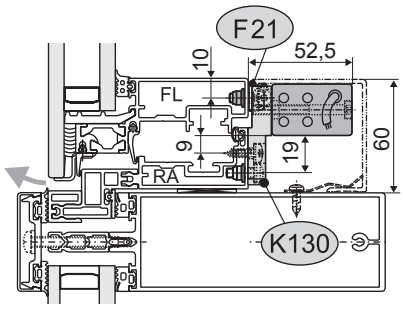
Detail of mounting on steel window

Top-hung outward opening Frame assembly



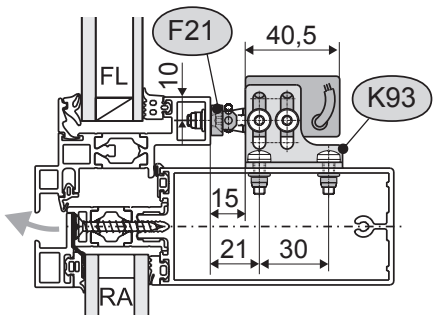
Detail of mounting on aluminium window

Top-hung outward opening Frame assembly



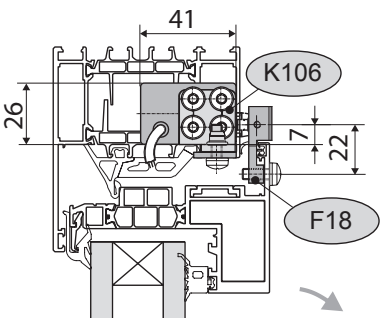
Detail of mounting on aluminium window

Top-hung outward opening Transom assembly



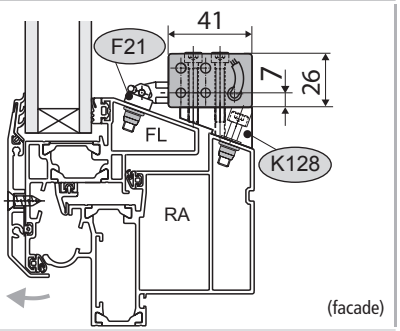
Detail of mounting on aluminium window

Bottom-hung inward opening Concealed assembly



Detail of mounting on aluminium window

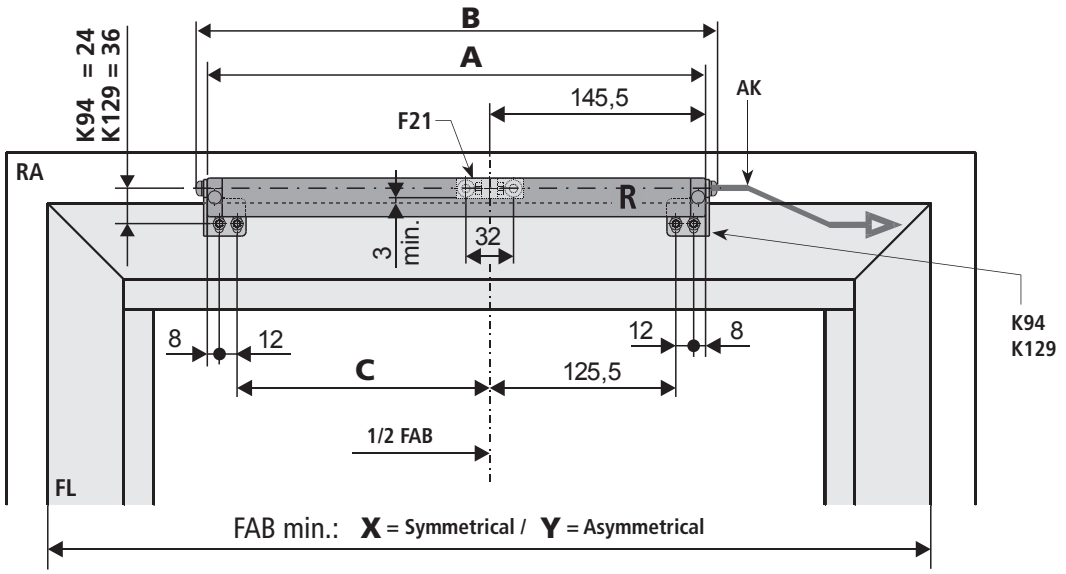
Top-hung outward opening Frame assembly



Detail of mounting on aluminium window

Installation step 5a: Hole layout for the frame brackets K94 / K129 and casement bracket F21

24V Solo application KS2 xxx / Version: right (Bottom-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	Stroke 800
A	336	381	431	546	546	626
B	350	395	445	560	560	640
C	170,5	215,5	265,5	380,5	380,5	460,5
X	≥ 380	≥ 470	≥ 570	≥ 800	≥ 800	≥ 960
Y	≥ 335	≥ 380	≥ 430	≥ 545	≥ 545	≥ 625

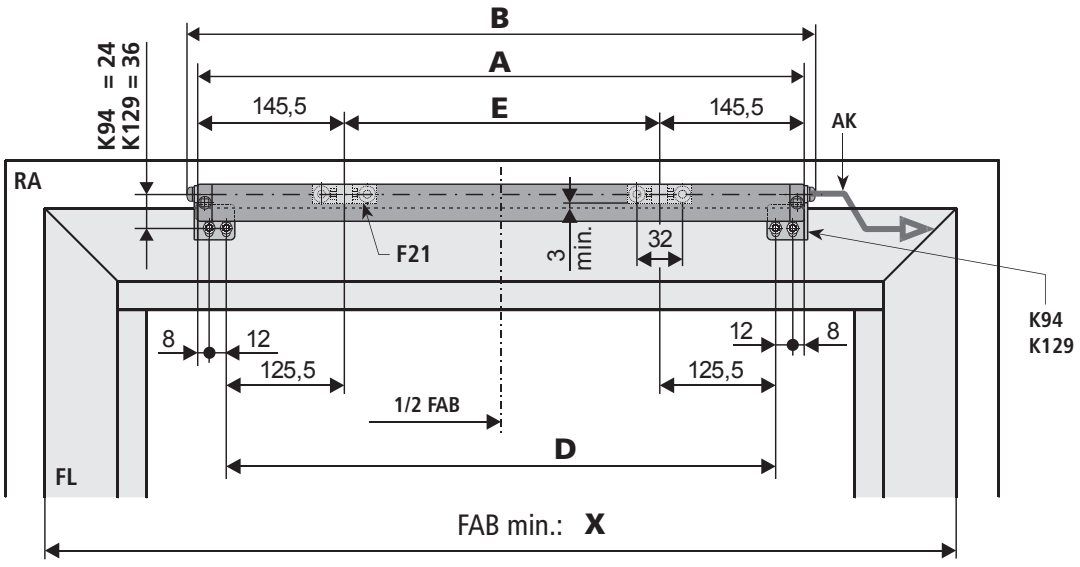
Window versions:
Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

Version: left

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

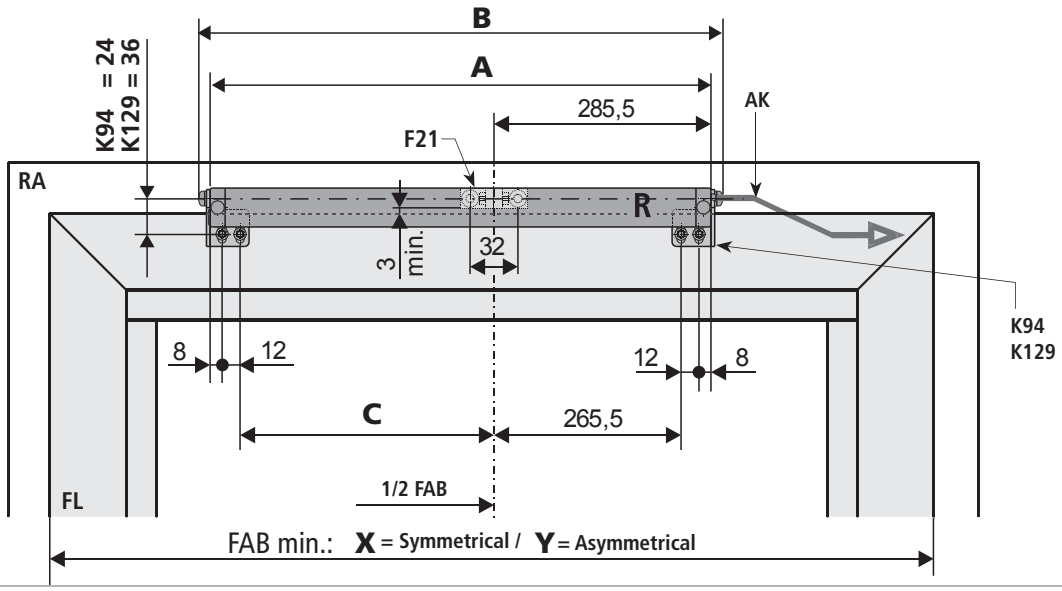
24V Solo application KS2-Twin xxx (Bottom-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	
A	641	831	831	1061	1061	
B	655	845	845	1075	1075	
D	601	791	791	1021	1021	
E	350	540	540	770	770	
X	≥ 640	≥ 830	≥ 830	≥ 1060	≥ 1060	

Window versions:
Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

230V Solo application KS2 xxx / Version: right (Bottom-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	Stroke 800
A	476	521	571	686	686	766
B	490	535	585	700	700	780
C	170,5	215,5	265,5	380,5	380,5	460,5
X	≥ 570	≥ 570	≥ 570	≥ 800	≥ 800	≥ 960
Y	≥ 475	≥ 520	≥ 570	≥ 685	≥ 685	≥ 765

Window versions:

Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

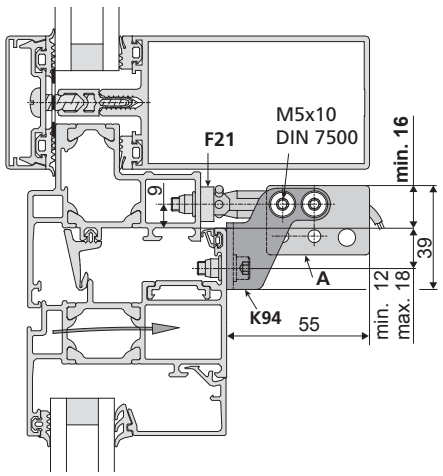
Version: left

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

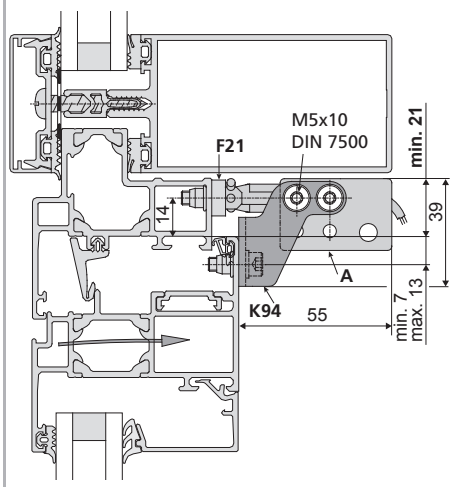
24V 230V Tensile load - Casement assembly (Bottom-hung - inward opening windows)

Frame bracket: K94
Casement bracket: F21
Drive: fixed
Space on the frame: 16 mm



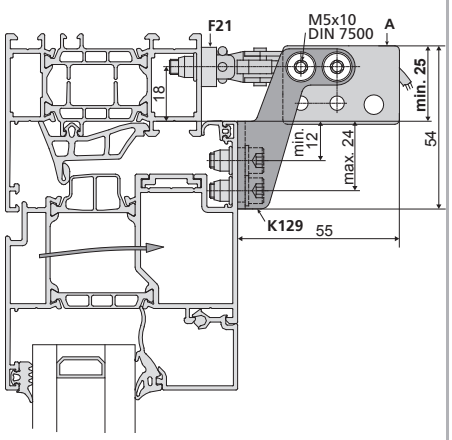
Minimum overall height of casement (FAH)						
Stroke	200	300	400	500	600	800
Height	325	500	750	975	1200	1600

Frame bracket: K94
Casement bracket: F21
Drive: fixed
Space on the frame: 21 mm



Minimum overall height of casement (FAH)						
Stroke	200	300	400	500	600	800
Height	325	450	550	675	800	1080

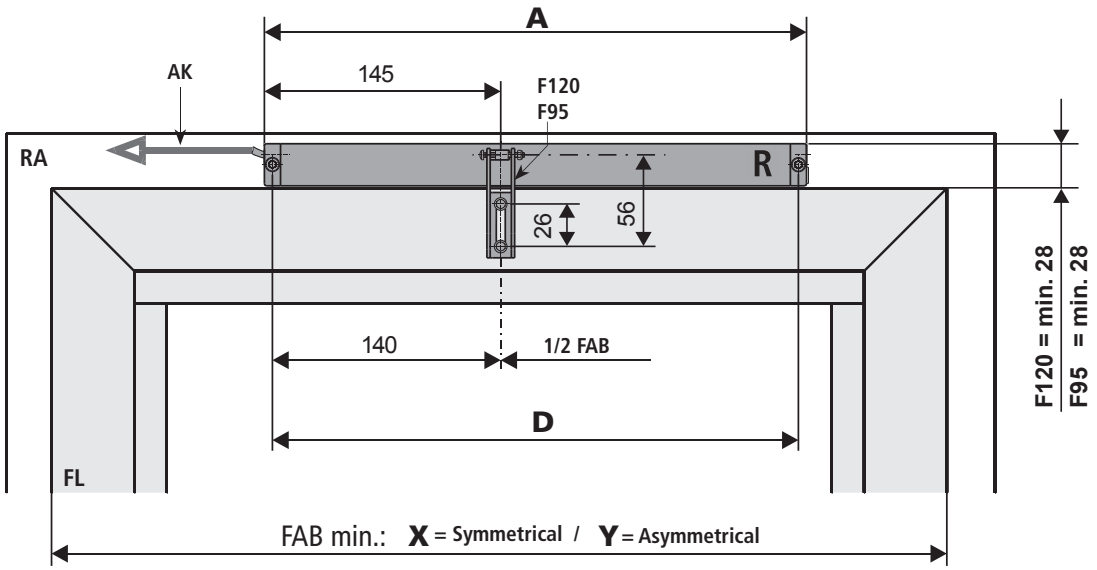
Frame bracket: K129
Casement bracket: F21
Drive: fixed
Space on the frame: 25 mm



Minimum overall height of casement (FAH)						
Stroke	200	300	400	500	600	800
Height	325	450	550	675	800	1080

Installation step 5B: Hole layout for casement brackets F120 / F95

24V Solo application KS2 xxx / Version: right (Bottom-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	Stroke 800
A	335	380	430	545	545	625
D	325	370	420	535	535	615
X	≥ 380	≥ 470	≥ 570	≥ 800	≥ 800	≥ 960
Y	≥ 335	≥ 380	≥ 430	≥ 545	≥ 545	≥ 625

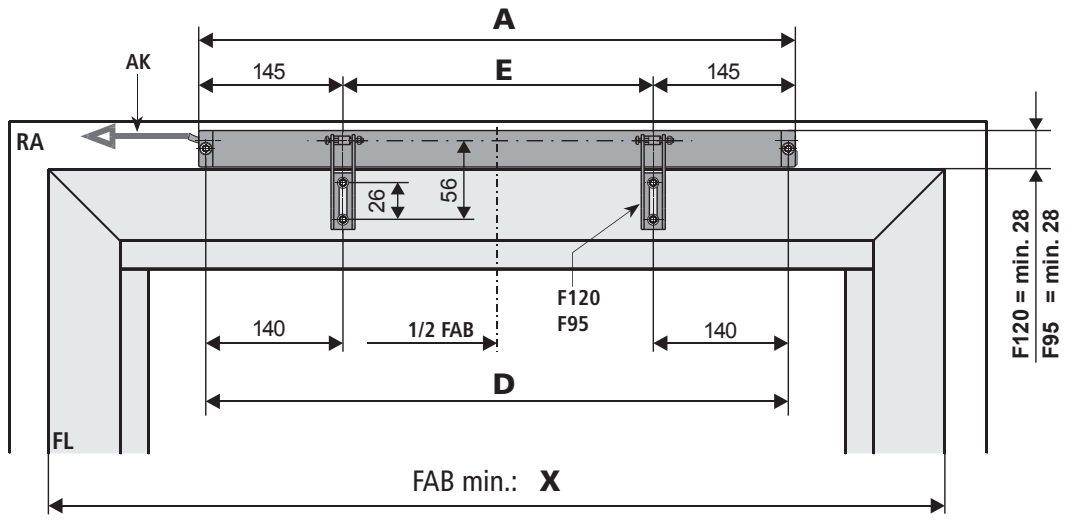
Window versions:
Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

Version: left

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

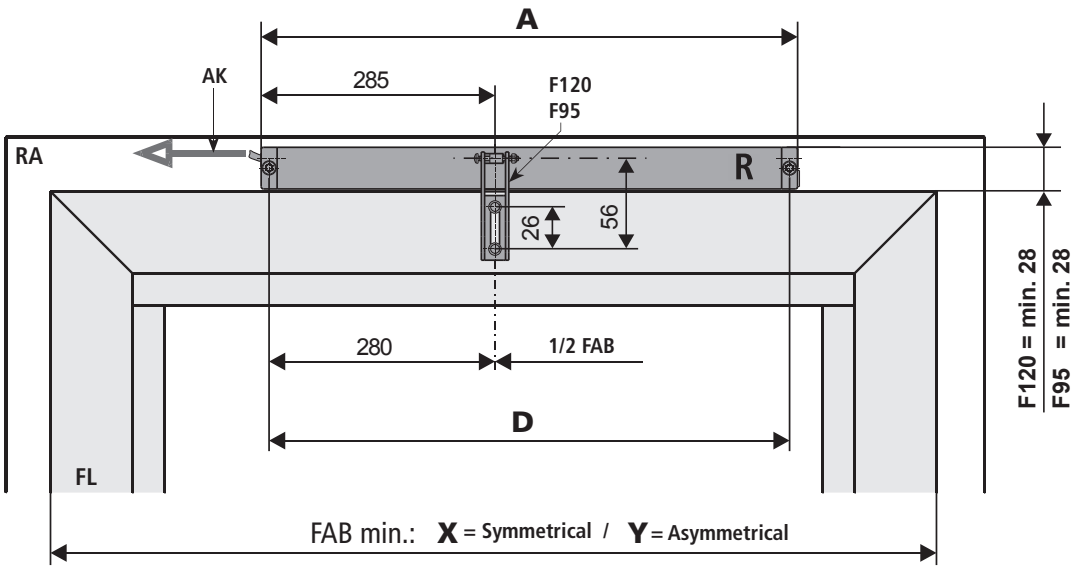
24V Solo application KS2-Twin xxx (Bottom-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	
A	640	830	830	1060	1060	
D	630	820	820	1050	1050	
E	350	540	540	770	770	
X	≥ 640	≥ 830	≥ 830	≥ 1060	≥ 1060	

Window versions:
Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

230V Solo application KS2 xxx / Version: right (Bottom-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	Stroke 800
A	475	520	570	685	685	765
D	465	510	560	675	675	755
X	≥ 570	≥ 570	≥ 570	≥ 800	≥ 800	≥ 960
Y	≥ 475	≥ 520	≥ 570	≥ 685	≥ 685	≥ 765

Window versions:
Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

Version: left

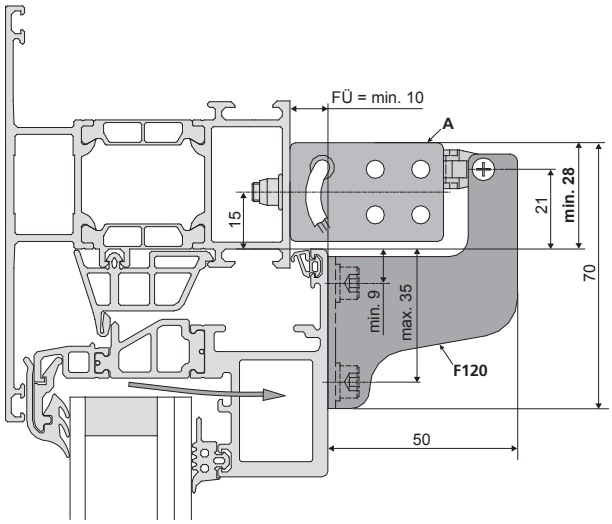
Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V 230V Tensile load - Frame assembly (Bottom-hung - inward opening windows)

Frame bracket: -
Casement bracket: F120
Drive: fixed

Space on the frame: 28 mm

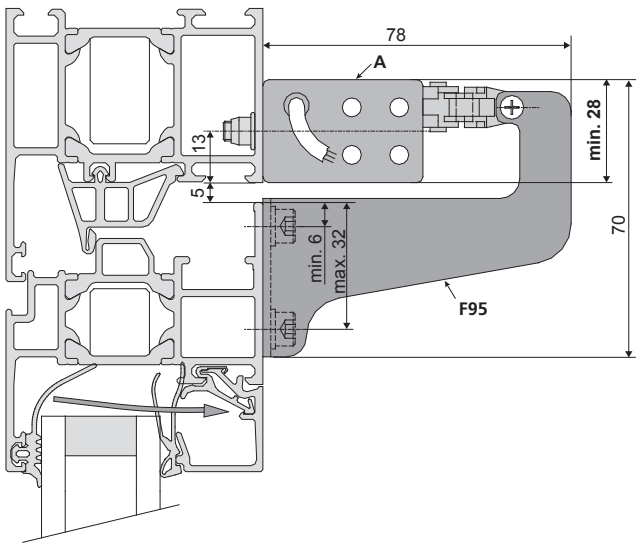


Minimum overall height of casement (FAH)

Stroke	200	300	400	500	600	800
Height	425	500	600	775	950	1250

Frame bracket: -
Casement bracket: F95
Drive: fixed

Space on the frame: 28 mm

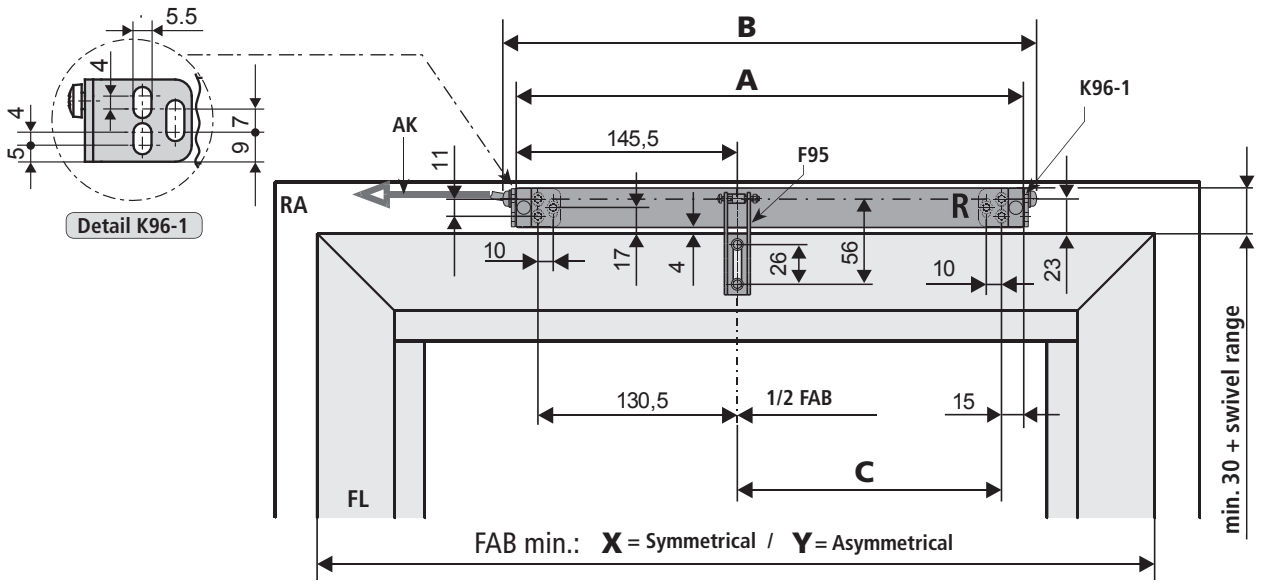


Minimum overall height of casement (FAH)

Stroke	200	300	400	500	600	800
Height	425	500	600	775	950	1250

Installation step 5c: Hole layout for the frame bracket K96-1 and casement bracket F95

24V Solo application KS2 xxx / Version: right (Bottom-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	Stroke 800
A	336	381	431	546	546	626
B	350	395	445	560	560	640
C	175,5	220,5	270,5	385,5	385,5	465,5
X	≥ 380	≥ 470	≥ 570	≥ 800	≥ 800	≥ 960
Y	≥ 335	≥ 380	≥ 430	≥ 545	≥ 545	≥ 625

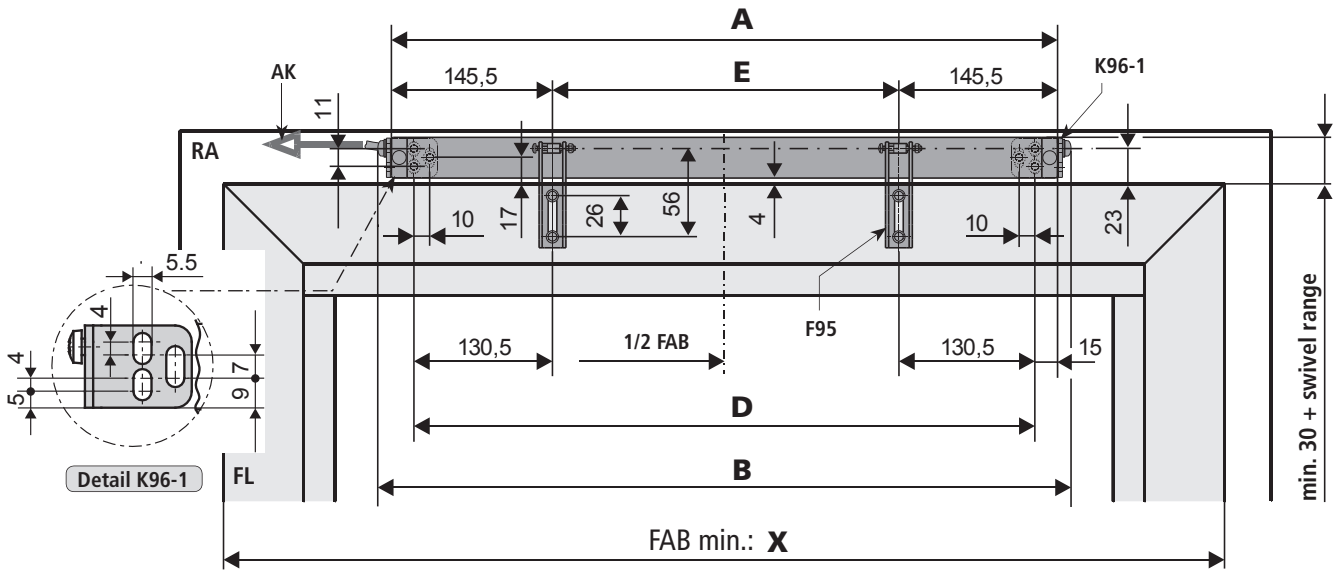
Window versions:
Bottom-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

Version: left

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

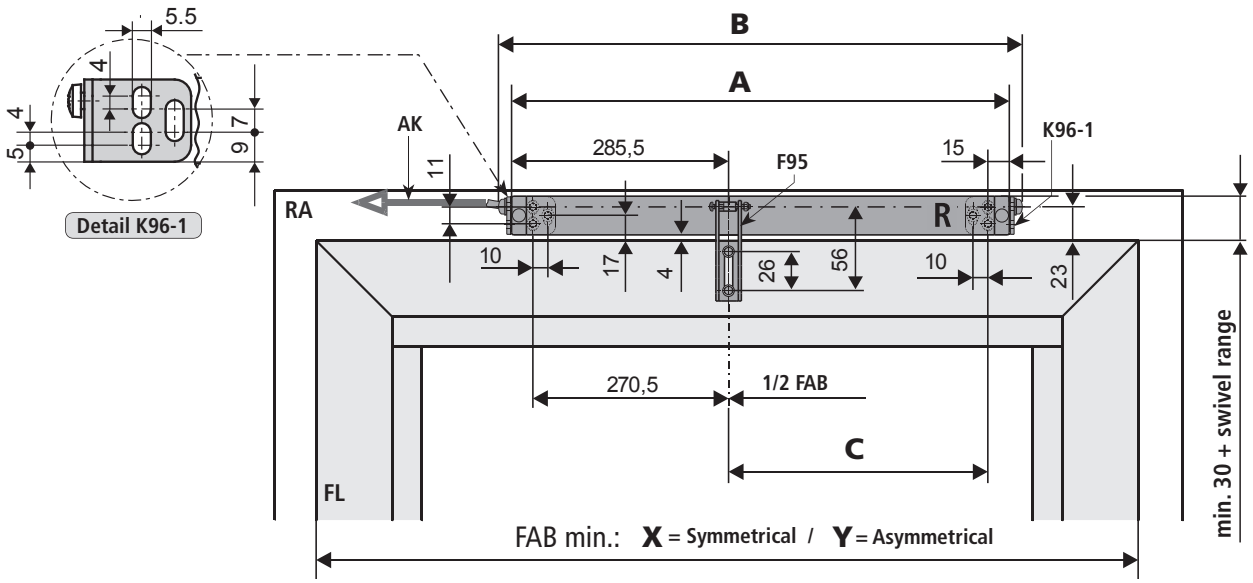
24V Solo application KS2-Twin xxx (Bottom-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	
A	641	831	831	1061	1061	
B	655	845	845	1075	1075	
D	611	801	801	1031	1031	
E	350	540	540	770	770	
X	≥ 640	≥ 830	≥ 830	≥ 1060	≥ 1060	

Window versions:
Bottom-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

230V Solo application KS2 xxx / Version: right (Bottom-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	Stroke 800
A	476	521	571	686	686	766
B	490	535	585	700	700	780
C	175,5	220,5	270,5	385,5	385,5	465,5
X	≥ 570	≥ 570	≥ 570	≥ 800	≥ 800	≥ 960
Y	≥ 475	≥ 520	≥ 570	≥ 685	≥ 685	≥ 765

Window versions:

Bottom-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

Version: left

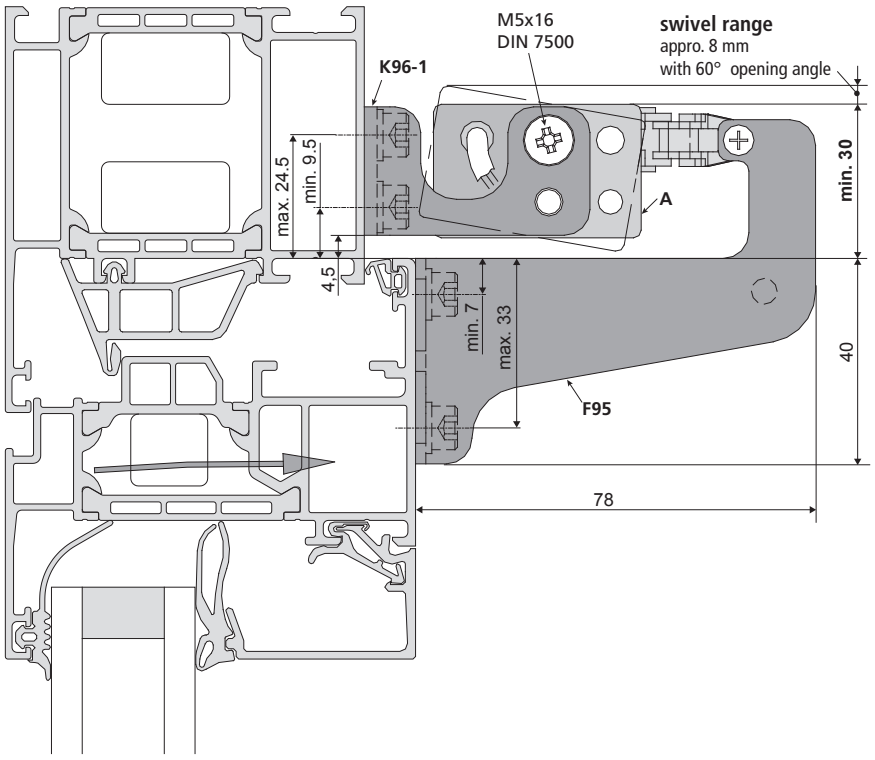
Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V 230V Tensile load - Frame assembly (Bottom-hung - inward opening windows)

Frame bracket: K96-1
Casement bracket: F95
Drive: swiveling

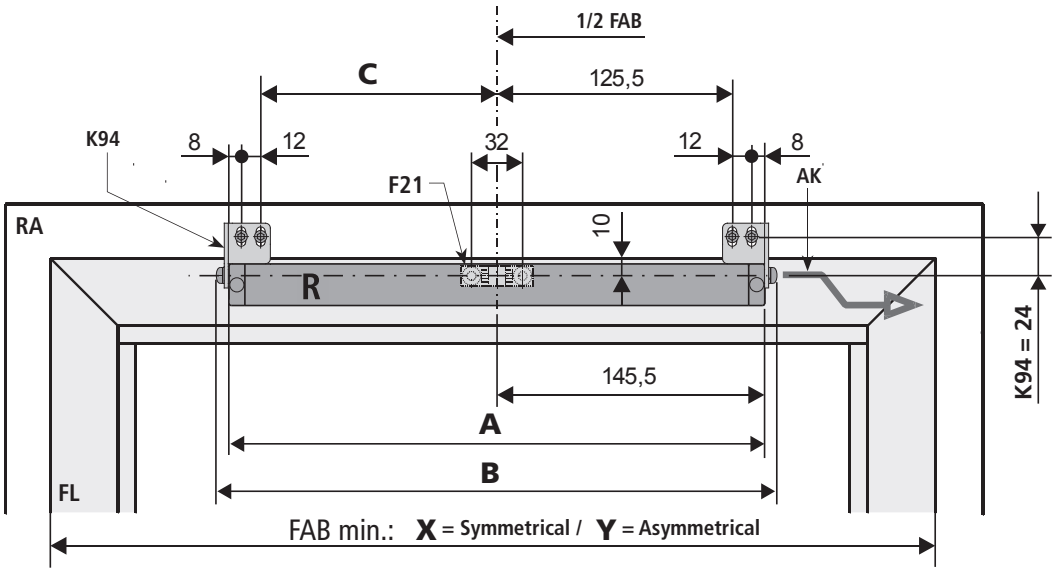
Space on the frame: 30 mm



Minimum overall height of casement (FAH)						
Stroke	**200**	**300**	**400**	**500**	**600**	**800**
Height	250	325	400	500	600	800

Installation step 5d: Hole layout for the frame bracket K94 and casement bracket F21

24V Solo application KS2 xxx / Version: right (Bottom-hung - outward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	Stroke 800
A	336	381	431	546	546	626
B	350	395	445	560	560	640
C	170,5	215,5	265,5	380,5	380,5	460,5
X	≥ 380	≥ 470	≥ 570	≥ 800	≥ 800	≥ 960
Y	≥ 335	≥ 380	≥ 430	≥ 545	≥ 545	≥ 625

Window versions:

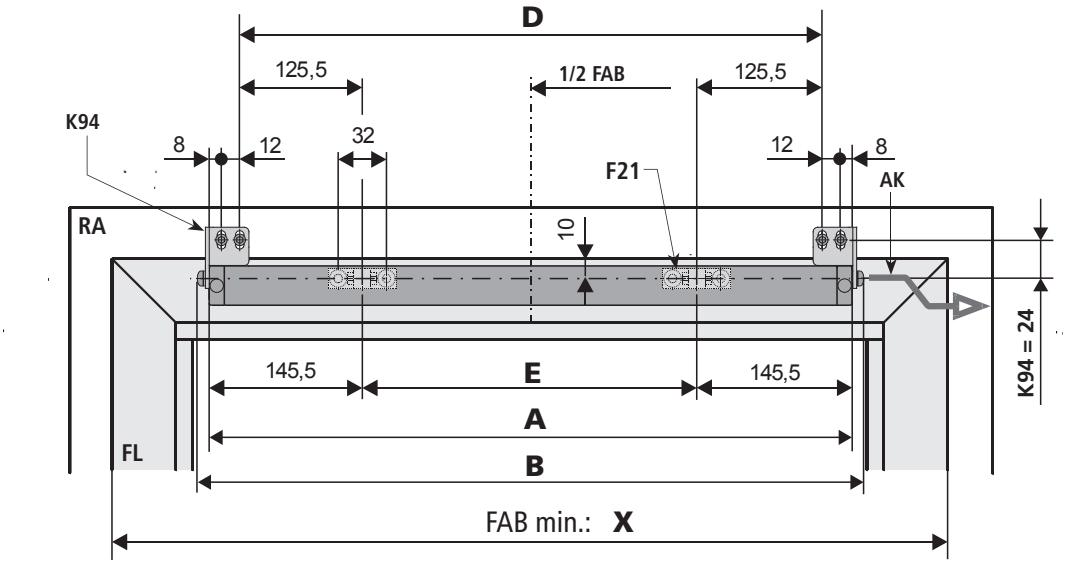
Bottom hung - outward opening
Top hung - outward opening
Side-hung - outward opening
Horizontally pivoting casement
Projecting top-hung casement

Version: left

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V Solo application KS2-Twin xxx (Bottom-hung - outward opening windows)

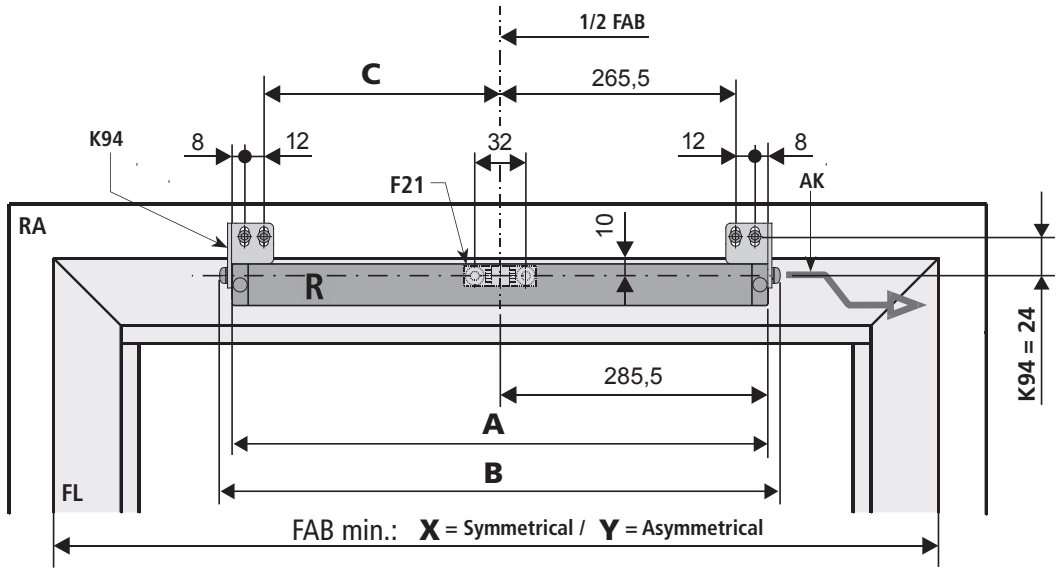


	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	
A	641	831	831	1061	1061	
B	655	845	845	1075	1075	
D	601	791	791	1021	1021	
E	350	540	540	770	770	
X	≥ 640	≥ 830	≥ 830	≥ 1060	≥ 1060	

Window versions:

Bottom hung - outward opening
Top hung - outward opening
Side-hung - outward opening
Horizontally pivoting casement
Projecting top-hung casement

230V Solo application KS2 xxx / Version: right (Bottom-hung - outward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500	Stroke 600	Stroke 800
A	476	521	571	686	686	766
B	490	535	585	700	700	780
C	170,5	215,5	265,5	380,5	380,5	460,5
X	≥ 570	≥ 570	≥ 570	≥ 800	≥ 800	≥ 960
Y	≥ 475	≥ 520	≥ 570	≥ 685	≥ 685	≥ 765

Window versions:

Bottom hung - outward opening
Top hung - outward opening
Side-hung - outward opening
Horizontally pivoting casement

Projecting top-hung casement

Version: left

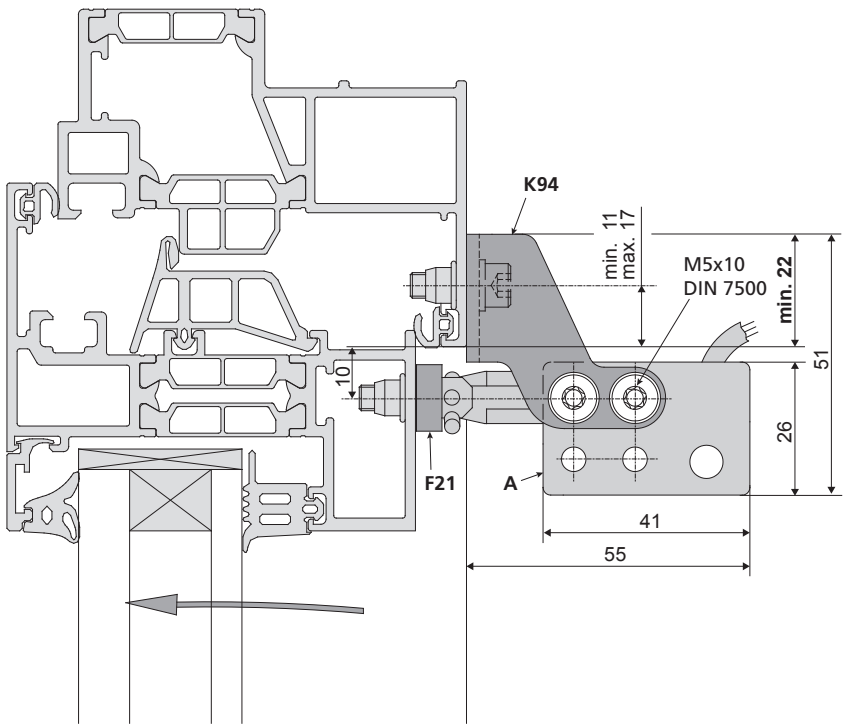
Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V 230V Tensile load - Frame assembly (Bottom-hung - outward opening windows)

Frame bracket: K94
Casement bracket: F21
Drive: fixed

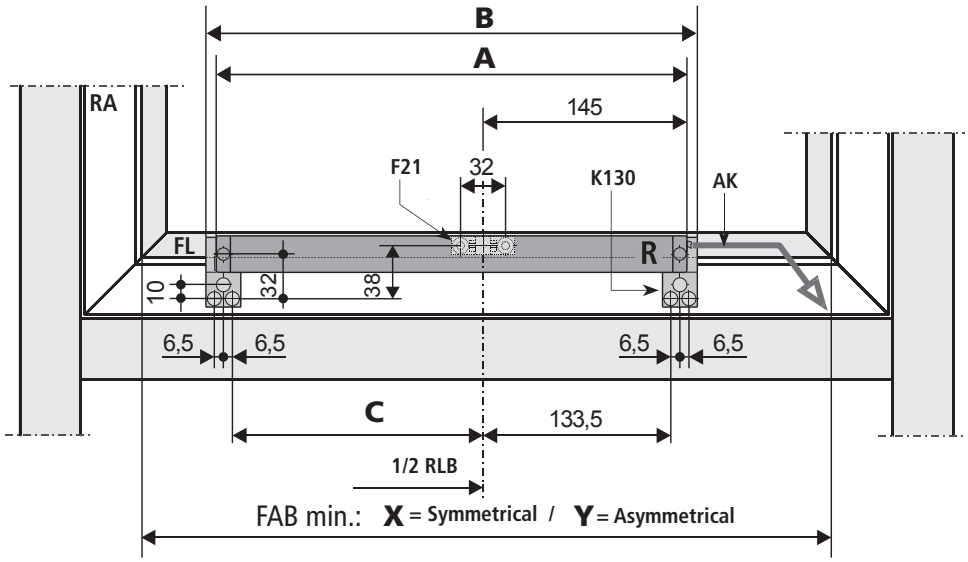
Space on the frame: 22 mm



Minimum overall height of casement (FAH)						
Stroke	**200**	**300**	**400**	**500**	**600**	**800**
Height	325	450	550	675	800	1080

INSTALLATION STEP 5E: HOLE LAYOUT FOR THE FRAME BRACKET K130 UND CASEMENT BRACKET F21

24V Solo application KS2 xxx / Version: right (Top-hung - outward opening windows)



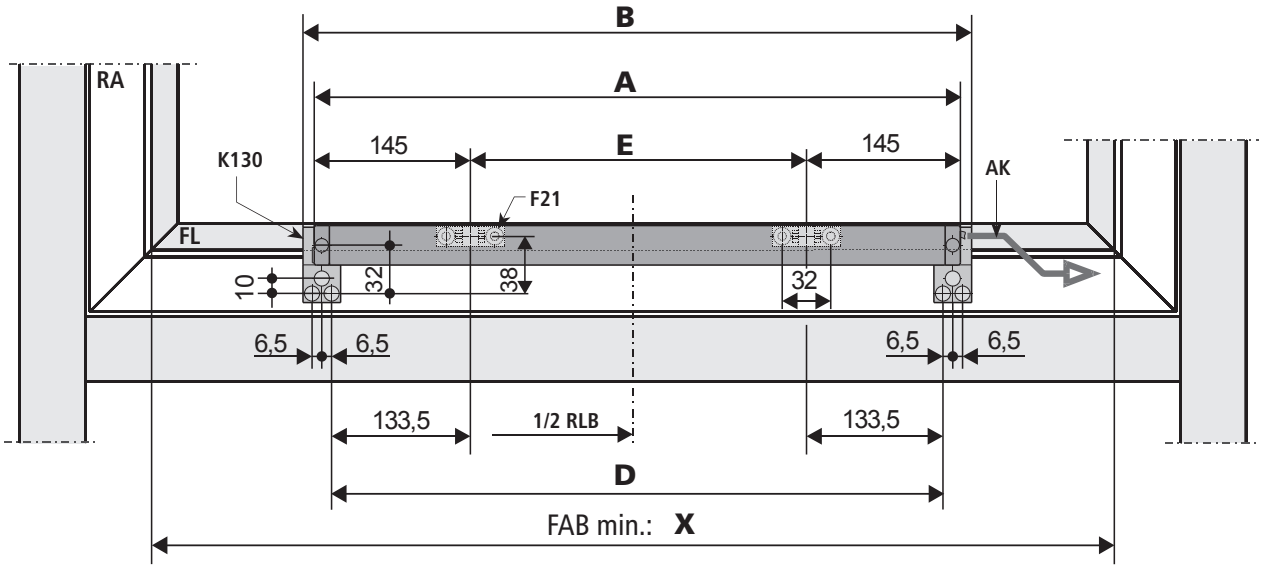
	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	335	380	430	545		
B	350	395	445	560		
C	178,5	223,5	273,5	388,5		
X	≥ 395	≥ 485	≥ 585	≥ 815		
Y	≥ 350	≥ 395	≥ 445	≥ 560		

Window versions:
Top hung - outward opening
Roof top-hung
Projecting top-hung casement
Version: left

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

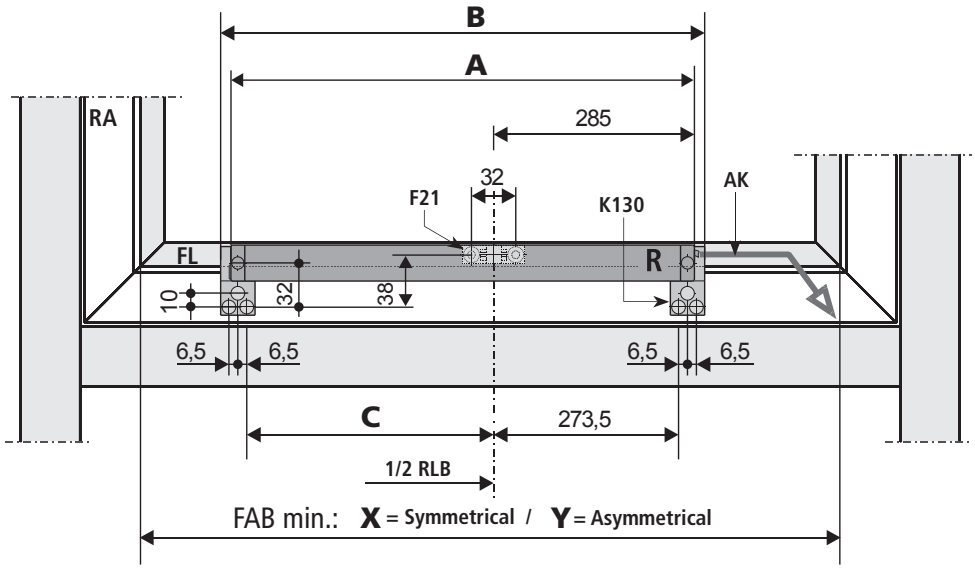
24V Solo application KS2-TWIN xxx (Top-hung - outward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	640	830	830	1060		
B	655	845	845	1075		
D	617	807	807	1037		
E	350	540	540	770		
X	≥ 655	≥ 845	≥ 845	≥ 1075		

Window versions:
Top hung - outward opening
Roof top-hung
Projecting top-hung casement

230V Solo application KS2 xxx / Version: right (Top-hung - outward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	475	520	570	685		
B	490	535	585	700		
C	178,5	223,5	273,5	388,5		
X	≥ 585	≥ 585	≥ 585	≥ 815		
Y	≥ 490	≥ 535	≥ 585	≥ 700		

Window versions:
Top hung - outward opening
Roof top-hung
Projecting top-hung casement

Version: left

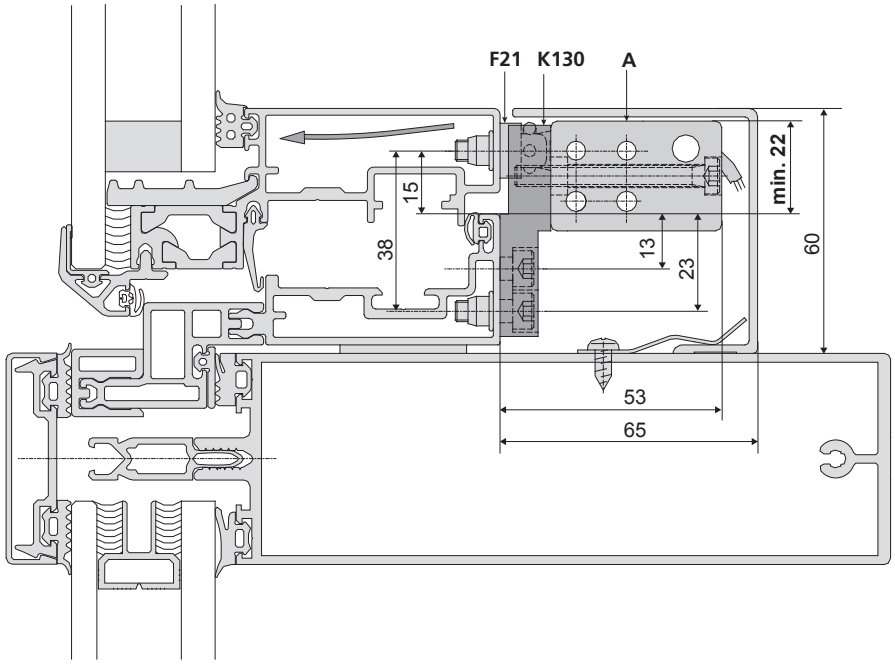
Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V 230V Pressure load - Frame assembly (Top-hung - outward opening windows)

Frame bracket: K130
Casement bracket: F21
Drive: fixed

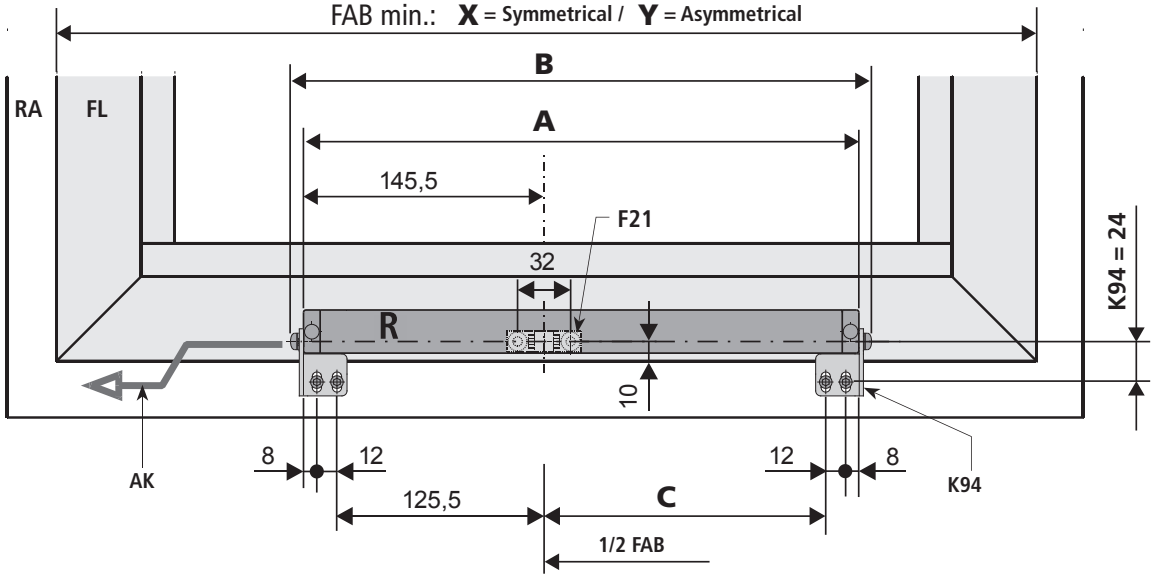
Space on the frame: 22 mm



Minimum overall height of casement (FAH)				
Stroke	**200**	**300**	**400**	**500**
Height	350	400	450	600

Installation step 5F: Hole layout for the frame bracket K94 and casement bracket F21

24V Solo application KS2 xxx / Version: right (Top-hung - outward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	336	381	431	546		
B	350	395	445	560		
C	170,5	215,5	265,5	380,5		
X	≥ 380	≥ 470	≥ 570	≥ 800		
Y	≥ 335	≥ 380	≥ 430	≥ 545		

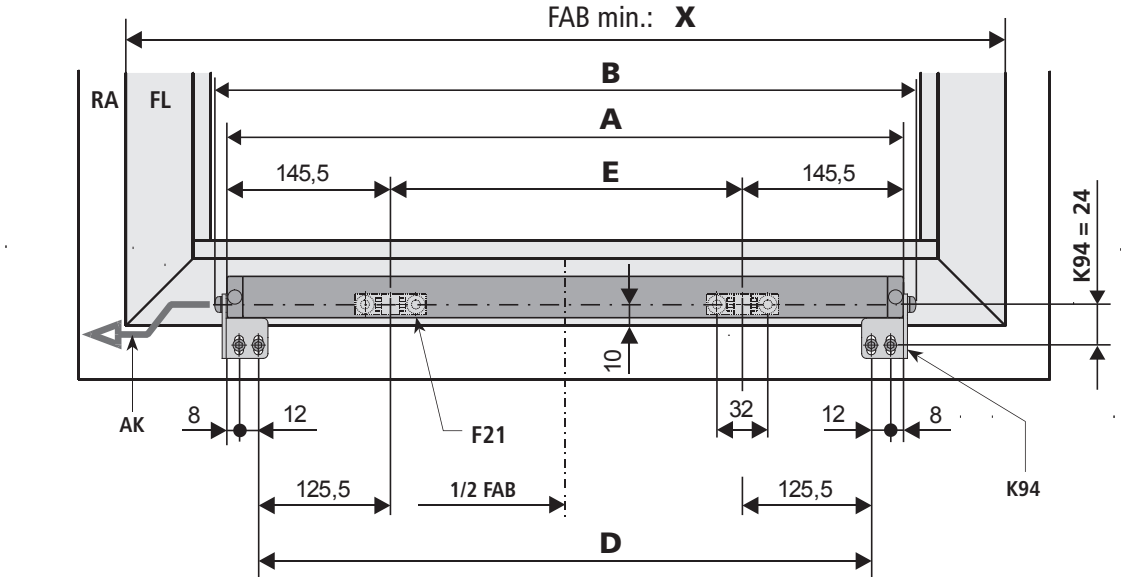
Window versions:

Bottom hung - outward opening
Top hung - outward opening
Side-hung - outward opening
Horizontally pivoting casement
Projecting top-hung casement
Version: left

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V Solo application KS2-Twin xxx (Top-hung - outward opening windows)

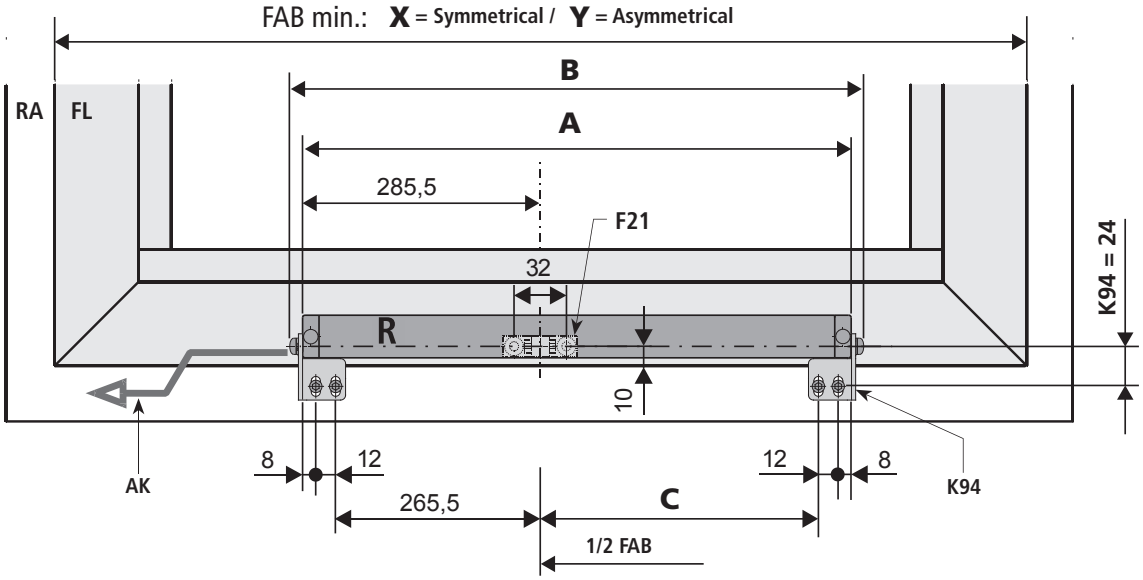


	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	641	831	831	1061		
B	655	845	845	1075		
D	601	791	791	1021		
E	350	540	540	770		
X	≥ 640	≥ 830	≥ 830	≥ 1060		

Window versions:

Bottom hung - outward opening
Top hung - outward opening
Side-hung - outward opening
Horizontally pivoting casement
Projecting top-hung casement

230V Solo application KS2 xxx / Version: right (Top-hung - outward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	476	521	571	686		
B	490	535	585	700		
C	170,5	215,5	265,5	380,5		
X	≥ 570	≥ 570	≥ 570	≥ 800		
Y	≥ 475	≥ 520	≥ 570	≥ 685		

Window versions:

Bottom hung - outward opening
Top hung - outward opening
Side-hung - outward opening
Horizontally pivoting casement
Projecting top-hung casement
Version: left

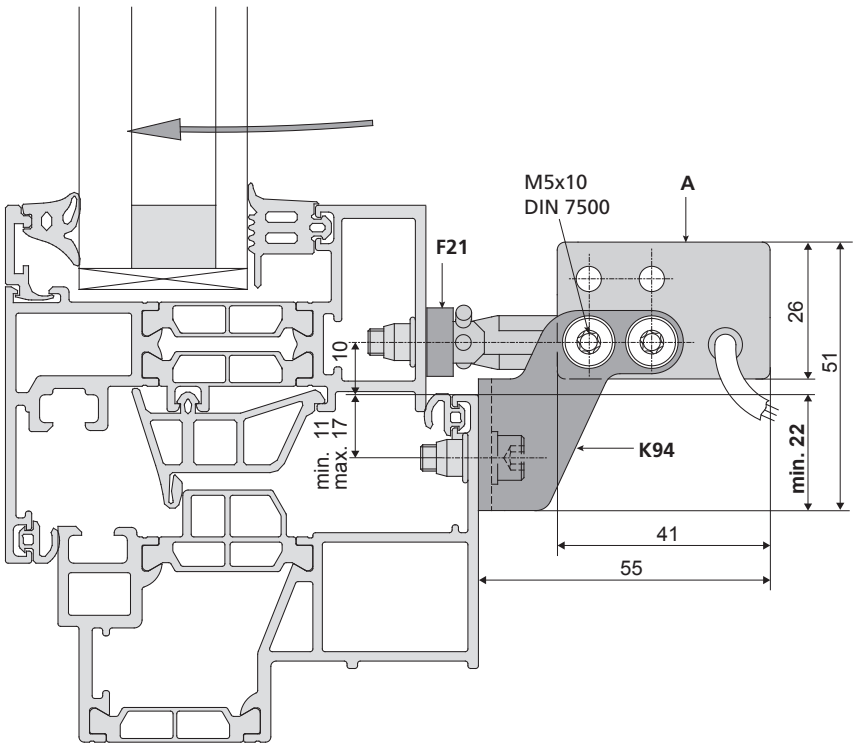
Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V 230V Pressure load - Frame assembly (Top-hung - outward opening windows)

Frame bracket: K94
Casement bracket: F21
Drive: fixed

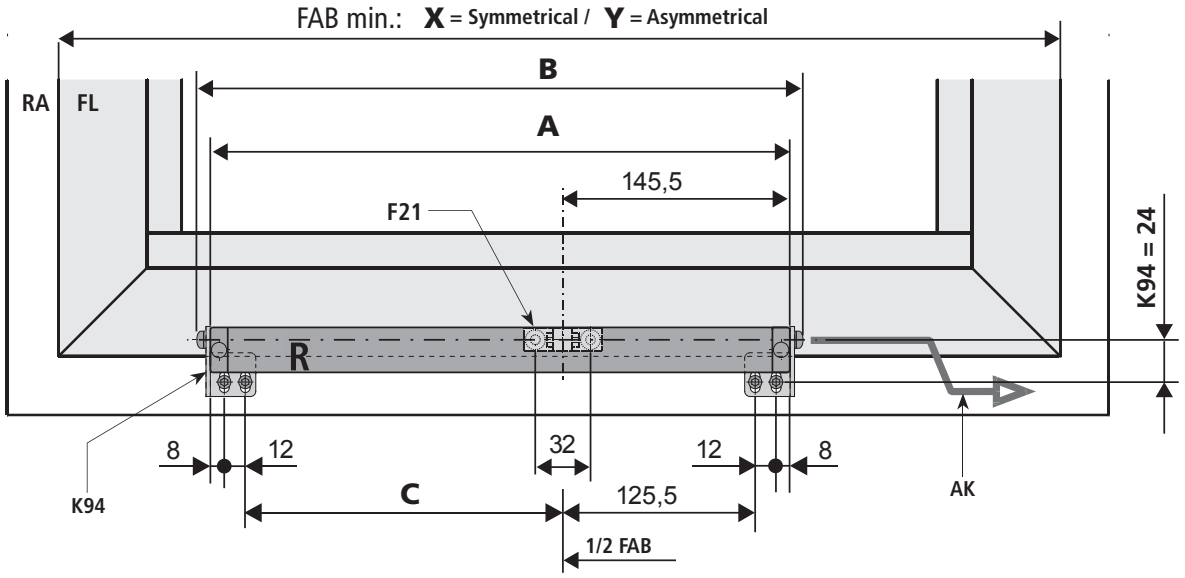
Space on the frame: 22 mm



Minimum overall height of casement (FAH)				
Stroke	**200**	**300**	**400**	**500**
Height	350	400	450	600

Installation step 5G: Hole layout for the frame brackets K94 und casement bracket F21

24V Solo application KS2 xxx / Version: right (Top-hung - outward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	336	381	431	546		
B	350	395	445	560		
C	170,5	215,5	265,5	380,5		
X	≥ 380	≥ 470	≥ 570	≥ 800		
Y	≥ 335	≥ 380	≥ 430	≥ 545		

Window versions:

Bottom hung - outward opening
Top hung - outward opening
Side-hung - outward opening
Horizontally pivoting casement

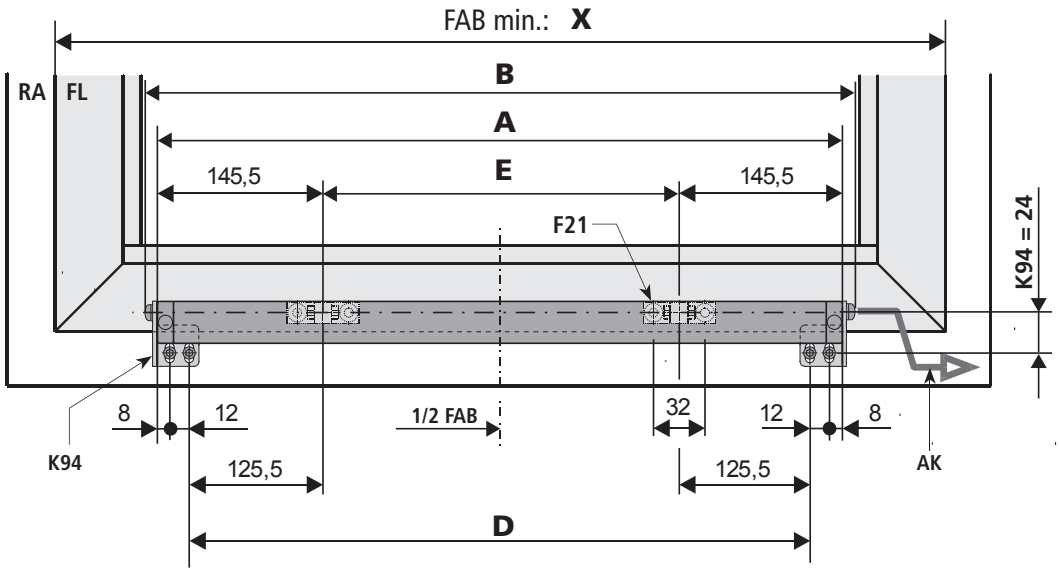
Projecting top-hung casement

Version: left

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V Solo application KS2-Twin xxx (Top-hung - outward opening windows)

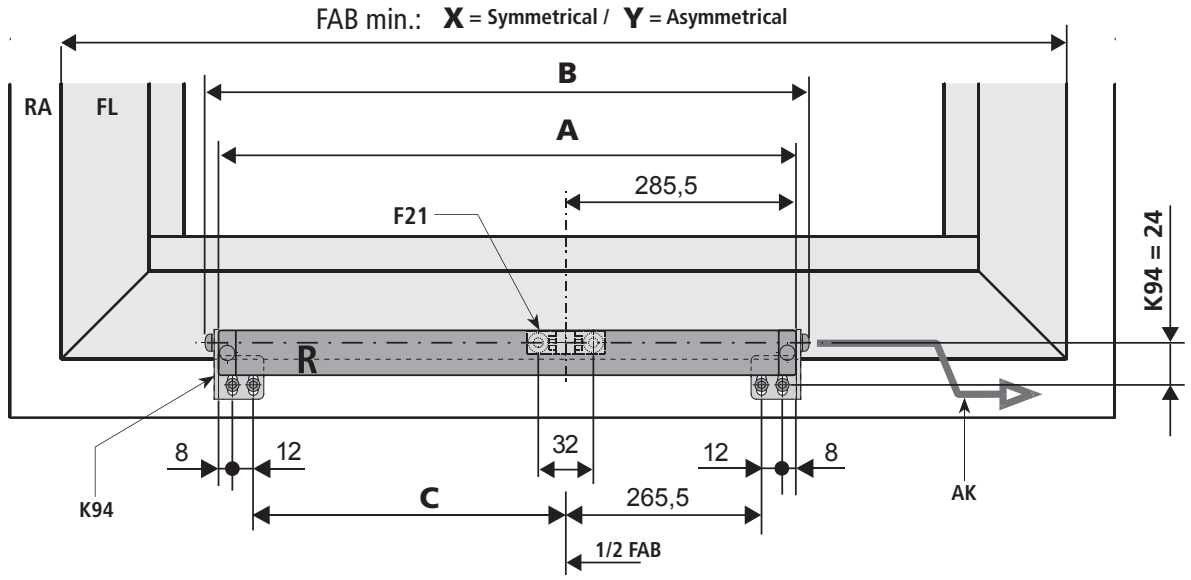


	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	641	831	831	1061		
B	655	845	845	1075		
D	601	791	791	1021		
E	350	540	540	770		
X	≥ 640	≥ 830	≥ 830	≥ 1060		

Window versions:

Bottom hung - outward opening
Top hung - outward opening
Side-hung - outward opening
Horizontally pivoting casement
Projecting top-hung casement

230V Solo application KS2 xxx / Version: right (Top-hung - outward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	476	521	571	686		
B	490	535	585	700		
C	170,5	215,5	265,5	380,5		
X	≥ 570	≥ 570	≥ 570	≥ 800		
Y	≥ 475	≥ 520	≥ 570	≥ 685		

Window versions:

Bottom hung - outward opening
Top hung - outward opening
Side-hung - outward opening
Horizontally pivoting casement
Projecting top-hung casement
Version: left

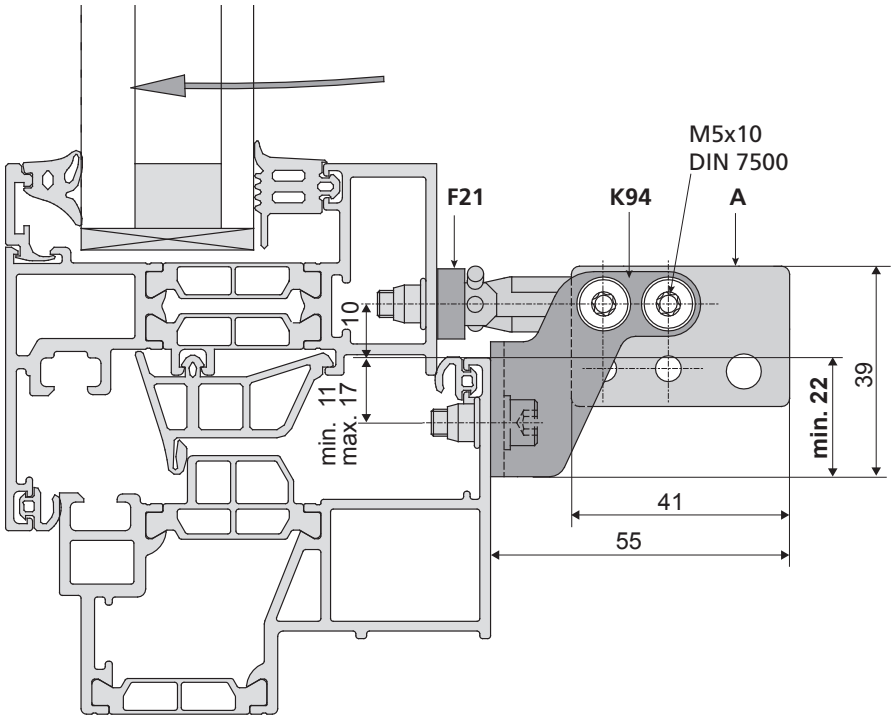
Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V 230V Pressure load - Frame assembly (Top-hung - outward opening windows)

Frame bracket: K94
Casement bracket: F21
Drive: fixed, rotated 180°

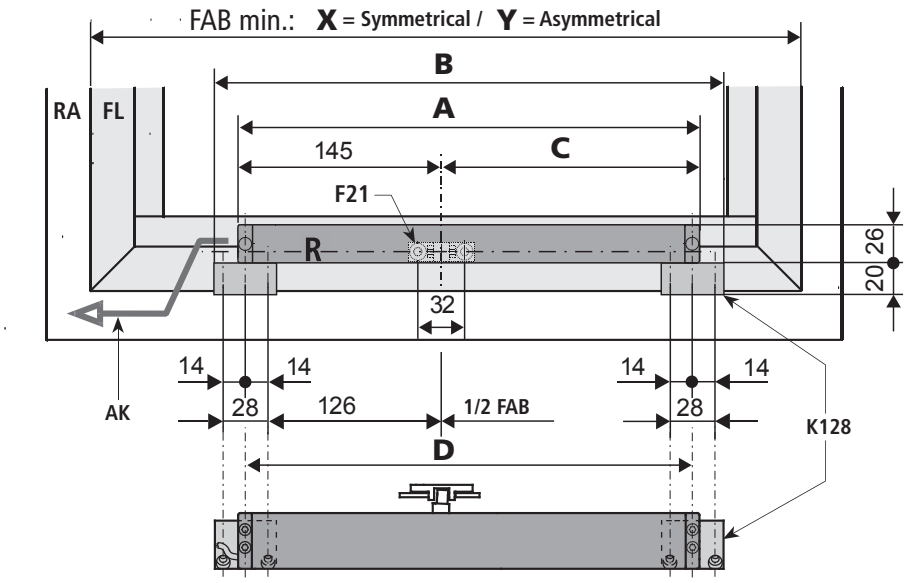
Space on the frame: 22 mm



Minimum overall height of casement (FAH)				
Stroke	**200**	**300**	**400**	**500**
Height	400	500	700	800

Installation step 5h: Hole layout for the frame brackets K128 and casement bracket F21

24V Solo application KS2 xxx / Version: right (Top-hung - outward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	335	380	430	545		
B	365	410	460	575		
C	190	235	285	400		
D	325	370	420	535		
X	≥ 410	≥ 500	≥ 600	≥ 830		
Y	≥ 365	≥ 410	≥ 460	≥ 575		

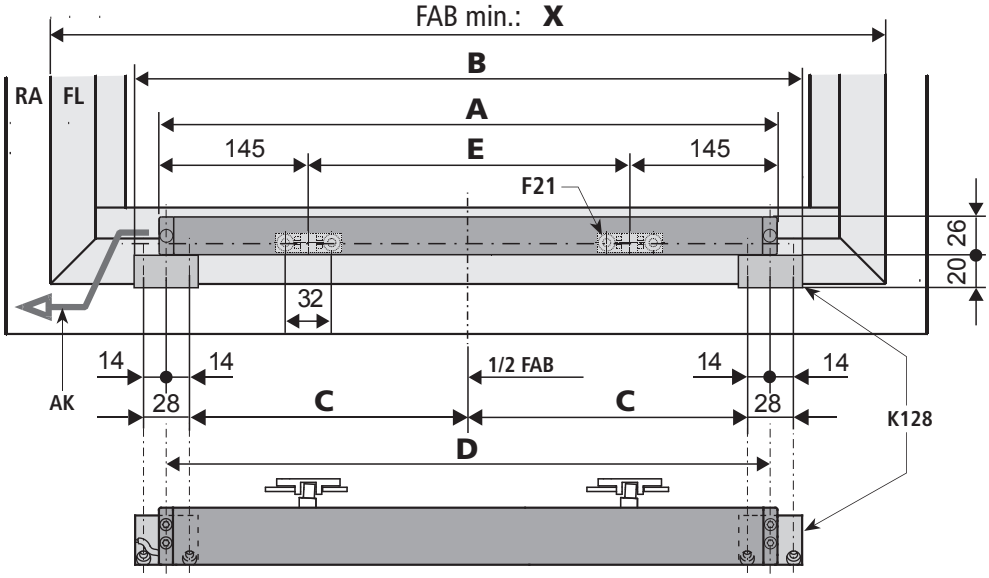
Window versions:

Bottom hung	- outward opening	Version: left
Top hung	- outward opening	
Side-hung	- outward opening	

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V Solo application KS2-Twin xxx (Top-hung - outward opening windows)

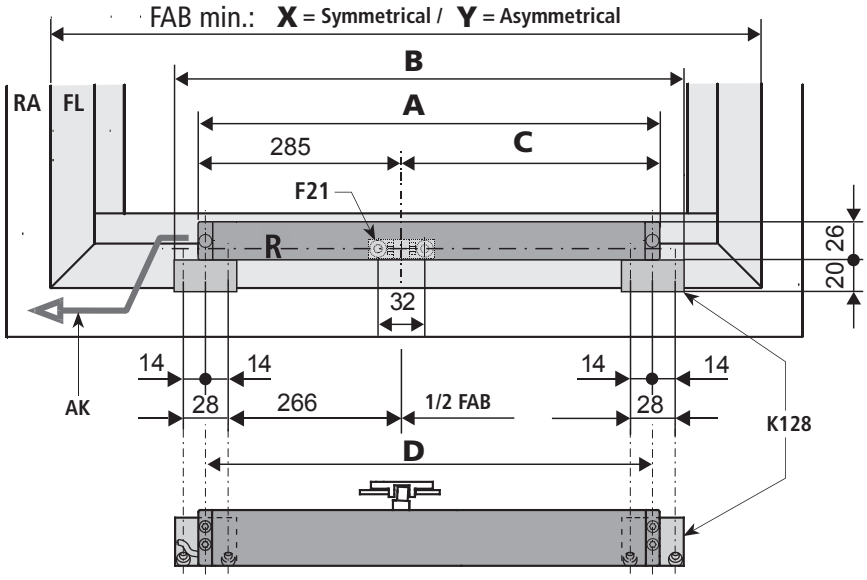


	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	640	830	830	1060		
B	670	860	860	1090		
C	301	396	396	511		
D	630	820	820	1050		
E	350	540	540	770		
X	≥ 640	≥ 830	≥ 830	≥ 1060		

Window versions:

Bottom hung	- outward opening
Top hung	- outward opening
Side-hung	- outward opening

230V Solo application KS2 xxx / Version: right (Top-hung - outward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	475	520	570	685		
B	505	550	600	715		
C	190	235	285	400		
D	465	510	560	675		
X	≥ 600	≥ 600	≥ 600	≥ 830		
Y	≥ 505	≥ 550	≥ 600	≥ 715		

Window versions:

Bottom hung	- outward opening	Version: left
Top hung	- outward opening	
Side-hung	- outward opening	

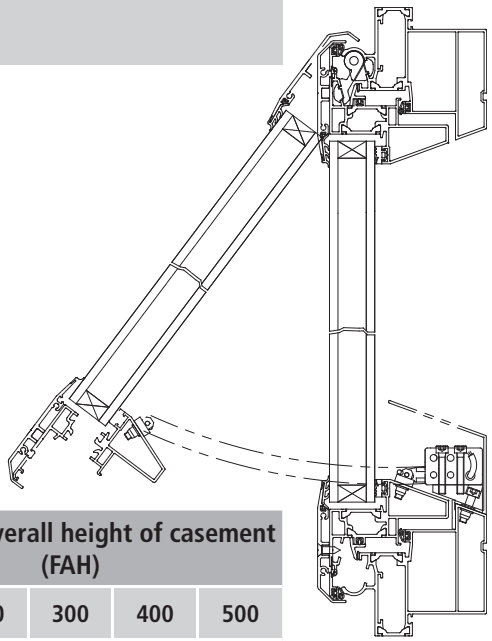
Version left (L): as right (R), but in mirror image

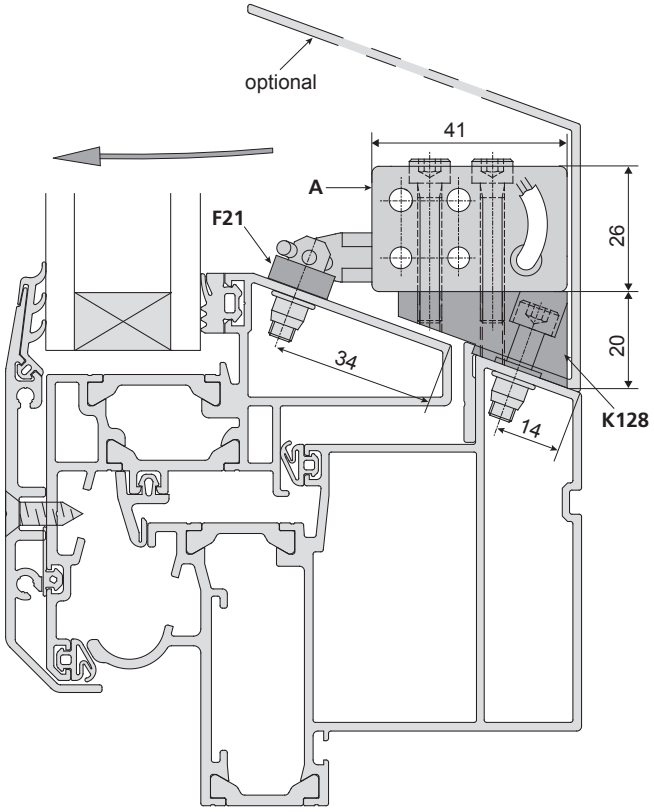
When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V 230V Pressure load - Frame assembly (Top-hung - outward opening windows)

Frame bracket: K128
Casement bracket: F21
Drive: fixed

Assembly on Schüco AWS 57RO

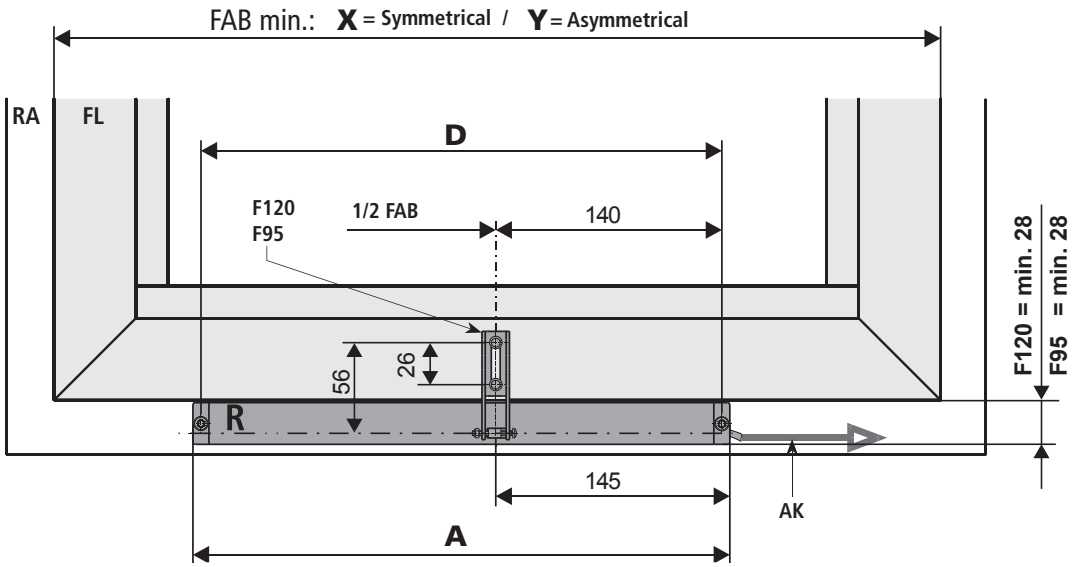




Minimum overall height of casement (FAH)				
Stroke	**200**	**300**	**400**	**500**
Height	450	500	550	700

INSTALLATION STEP 5I: HOLE LAYOUT FOR CASEMENT BRACKETS F120 / F95

24V Solo application KS2 xxx / Version: right (Top-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	335	380	430	545		
D	325	370	420	535		
X	≥ 380	≥ 470	≥ 570	≥ 800		
Y	≥ 335	≥ 380	≥ 430	≥ 545		

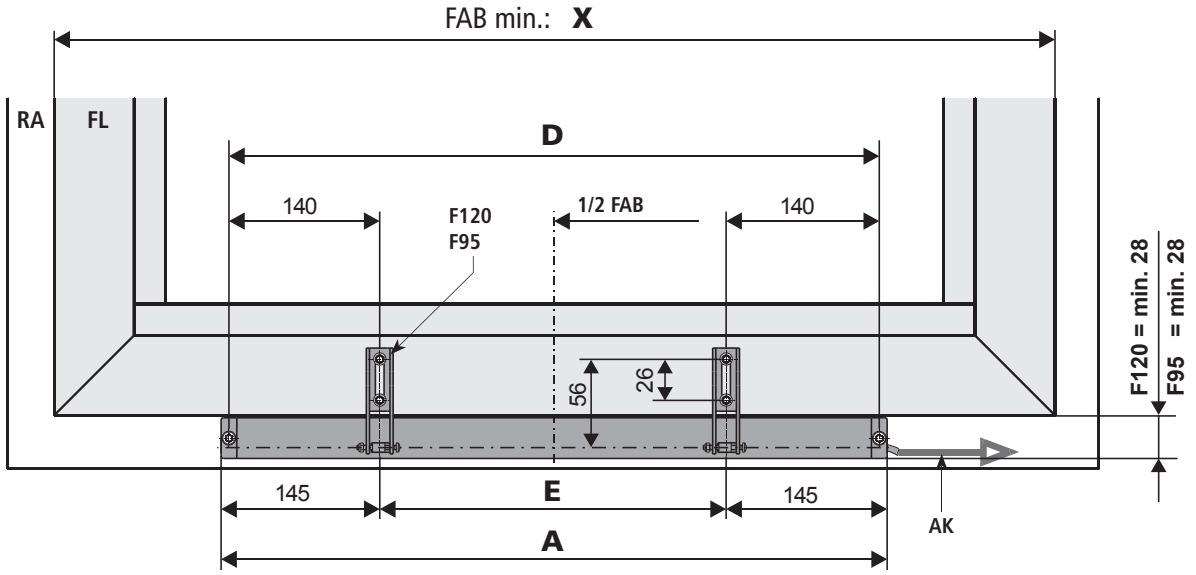
Window versions:
Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

Version: left

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

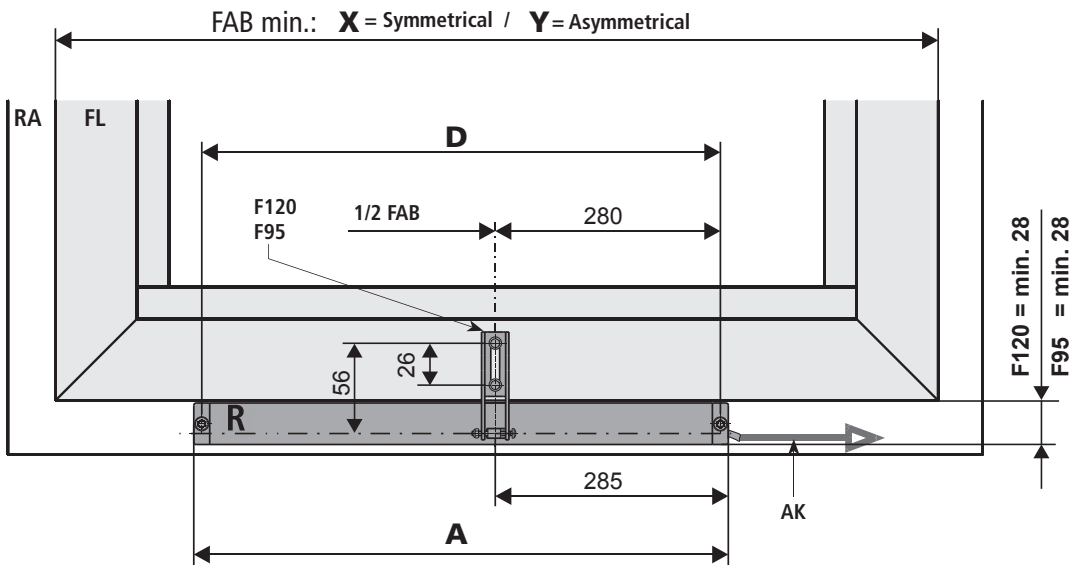
24V Solo application KS2-TWIN xxx (Top-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	640	830	830	1060		
D	630	820	820	1050		
E	350	540	540	770		
X	≥ 640	≥ 830	≥ 830	≥ 1060		

Window versions:
Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

230V Solo application KS2 xxx / Version: right (Top-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	475	520	570	685		
D	465	510	560	675		
X	≥ 570	≥ 570	≥ 570	≥ 800		
Y	≥ 475	≥ 520	≥ 570	≥ 685		

Window versions:

Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening
Horizontally pivoting casement

Version: left

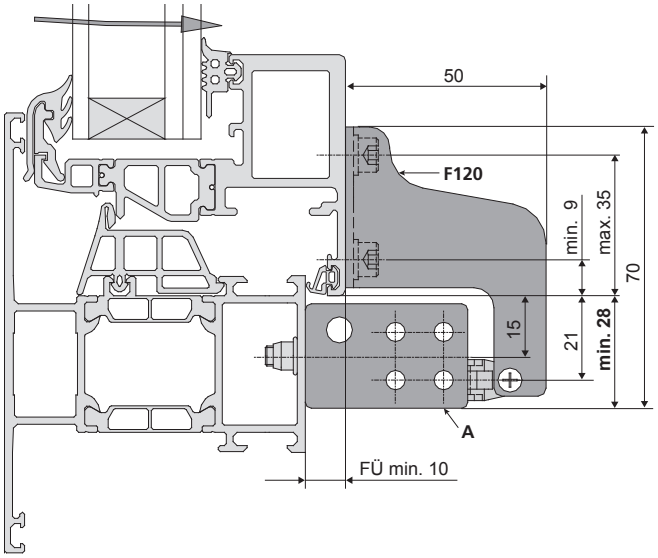
Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V 230V Pressure load - Frame assembly (Top-hung - inward opening windows)

Frame bracket: -
Casement bracket: F120
Drive: fixed

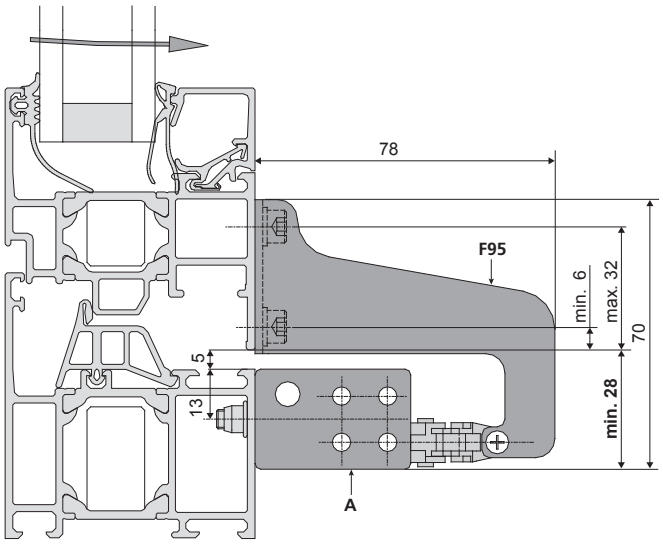
Space on the frame: 28 mm



Minimum overall height of casement (FAH)				
Stroke	**200**	**300**	**400**	**500**
Height	350	400	450	700

Frame bracket: -
Casement bracket: F95
Drive: fixed

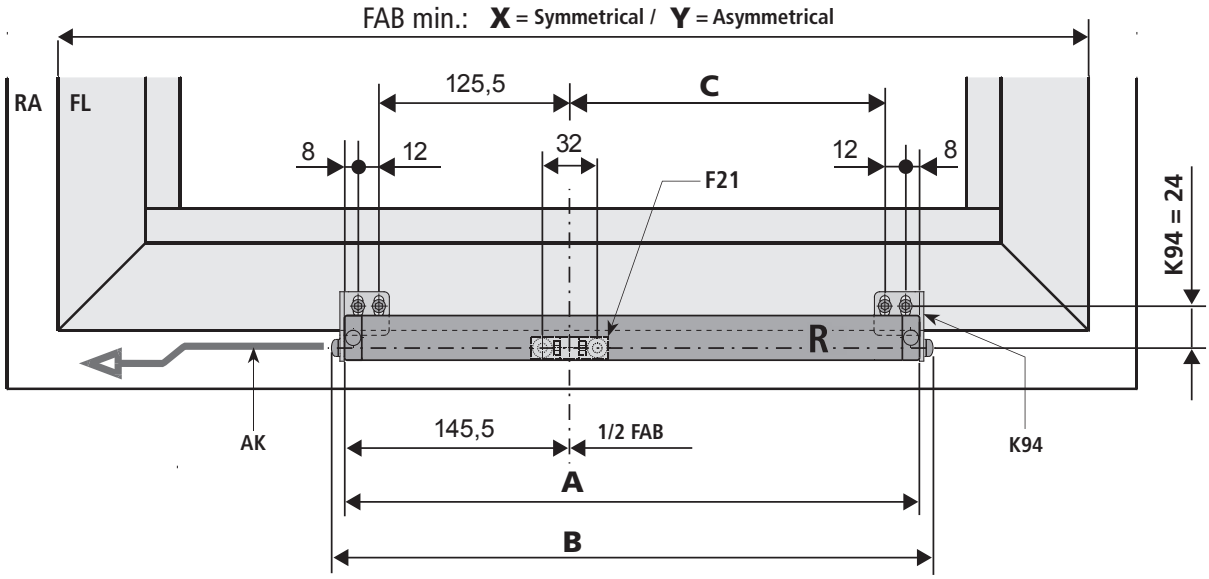
Space on the frame: 28 mm



Minimum overall height of casement (FAH)				
Stroke	**200**	**300**	**400**	**500**
Height	350	400	450	700

INSTALLATION STEP 5J: HOLE LAYOUT FOR THE FRAME BRACKETS K94 AND CASEMENT BRACKET F21

24V Solo application KS2 xxx / Version: right (Top-hung - inward opening windows)



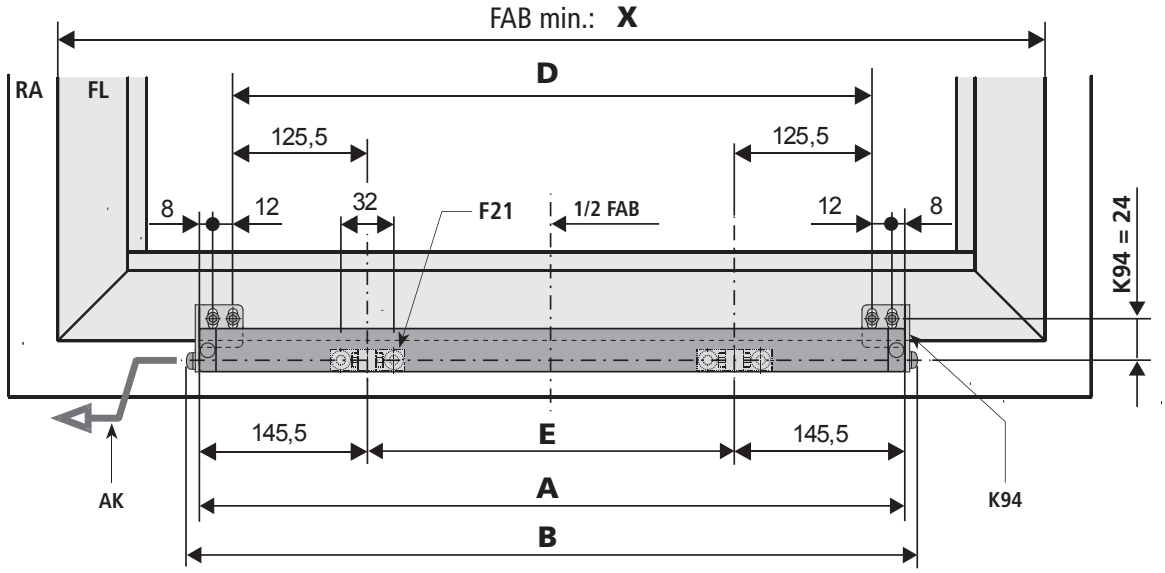
	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	336	381	431	546		
B	350	395	445	560		
C	170,5	215,5	265,5	380,5		
X	≥ 380	≥ 470	≥ 570	≥ 800		
Y	≥ 335	≥ 380	≥ 430	≥ 545		

Window versions:
Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening
Version: left

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

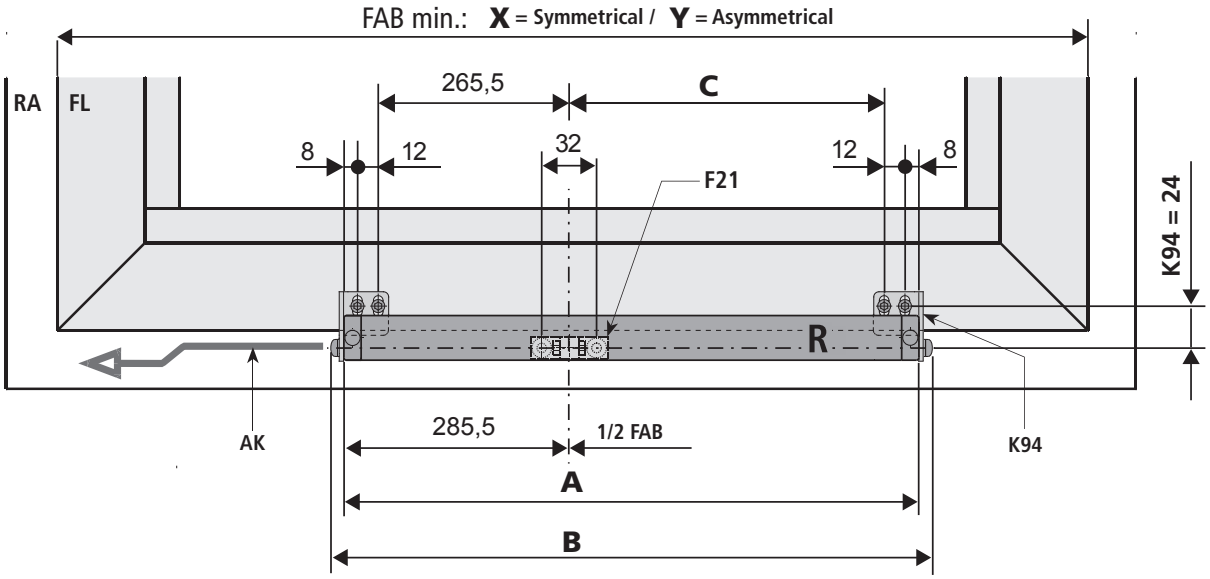
24V Solo application KS2-TWIN xxx (Top-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	641	831	831	1061		
B	655	845	845	1075		
D	601	791	791	1021		
E	350	540	540	770		
X	≥ 640	≥ 830	≥ 830	≥ 1060		

Window versions:
Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening

230V Solo application KS2 xxx / Version: right (Top-hung - inward opening windows)



	Stroke 200	Stroke 300	Stroke 400	Stroke 500		
A	476	521	571	686		
B	490	535	585	700		
C	170,5	215,5	265,5	380,5		
X	≥ 570	≥ 570	≥ 570	≥ 800		
Y	≥ 475	≥ 520	≥ 570	≥ 685		

Window versions:

Bottom-hung - inward opening
Top-hung - inward opening
Side-hung - inward opening

Version: left

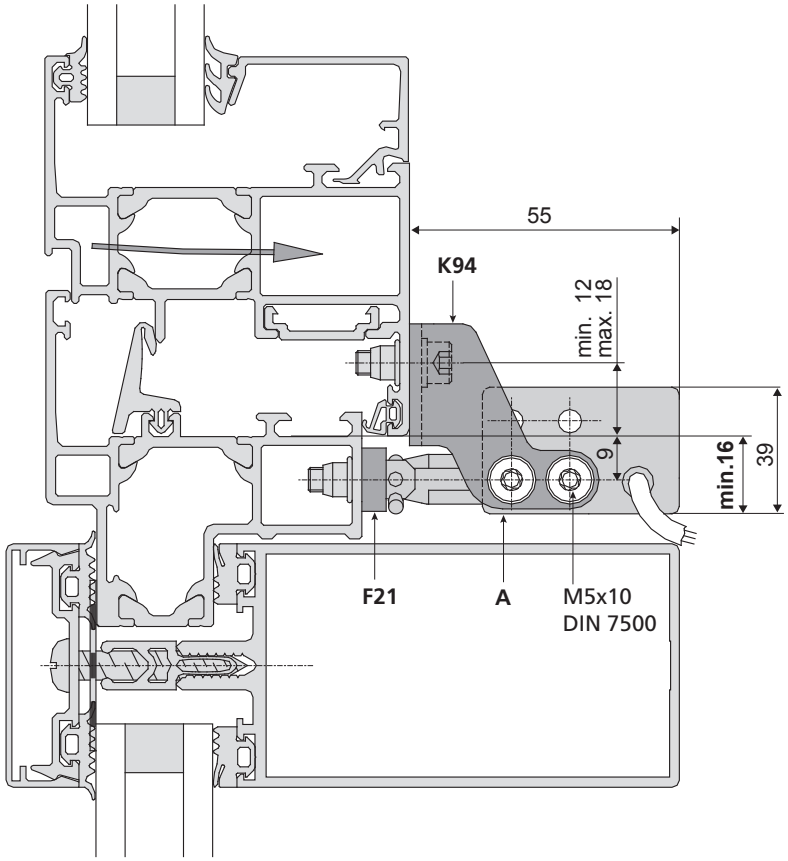
Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V 230V Pressure load - Casement assembly (Top-hung - inward opening windows)

Frame bracket: K94
Casement bracket: F21
Drive: fixed

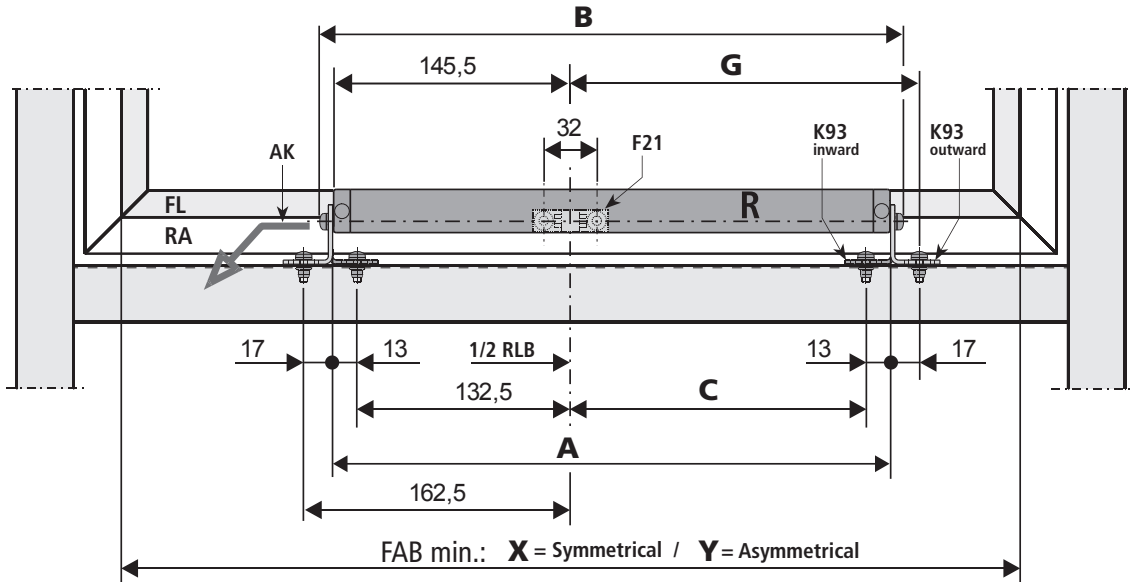
Space on the frame: 16 mm



Minimum overall height of casement (FAH)				
Stroke	**200**	**300**	**400**	**500**
Height	350	400	450	600

Installation step 5K: Hole layout for the frame brackets K93 and casement bracket F21

24V Solo application KS2 xxx / Version: right (Top-hung - outward opening windows)



	Frame casement K93 inward			
Stroke	200	300	400	500
A	336	381	431	546
B	350	395	445	560
C	177,5	255,5	272,5	387,5
X	≥ 380	≥ 470	≥ 570	≥ 800
Y	≥ 335	≥ 380	≥ 430	≥ 545

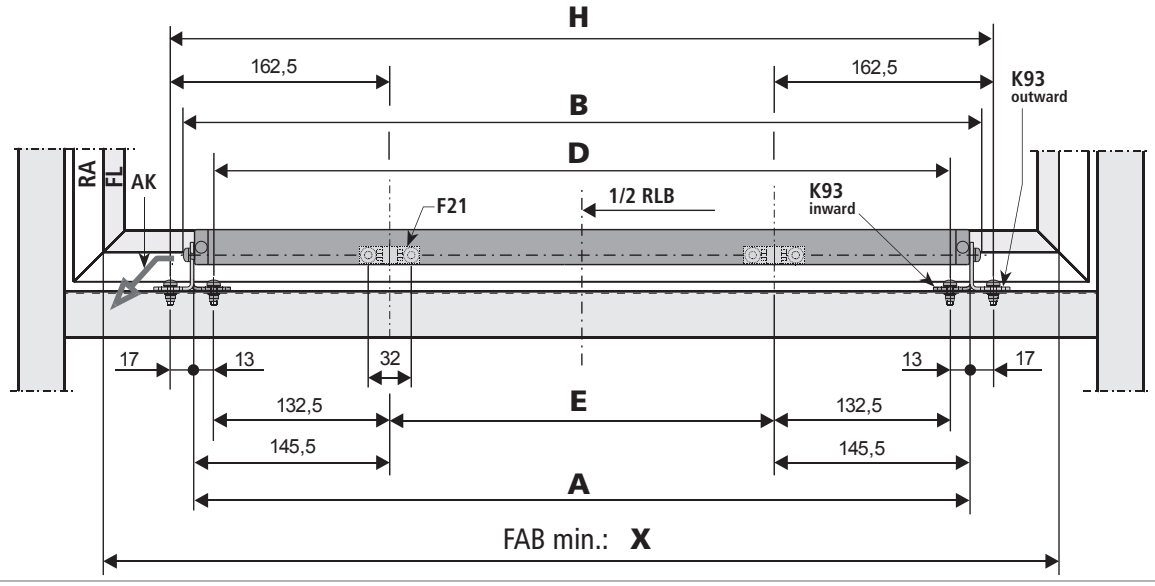
	Frame casement K93 outward			
Stroke	200	300	400	500
A	336	381	431	546
B	350	395	445	560
G	207,5	252,5	302,5	417,5
X	≥ 440	≥ 530	≥ 630	≥ 860
Y	≥ 395	≥ 440	≥ 490	≥ 605

Window versions:
Bottom hung - outward opening
Top hung - outward opening
Projecting top-hung casement
Skyskylight dome
Roof bottom-hung
Roof top-hung
Version: left

Version left (L): as right (R), but in mirror image

When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V Solo application KS2-Twin xxx (Top-hung - outward opening windows)

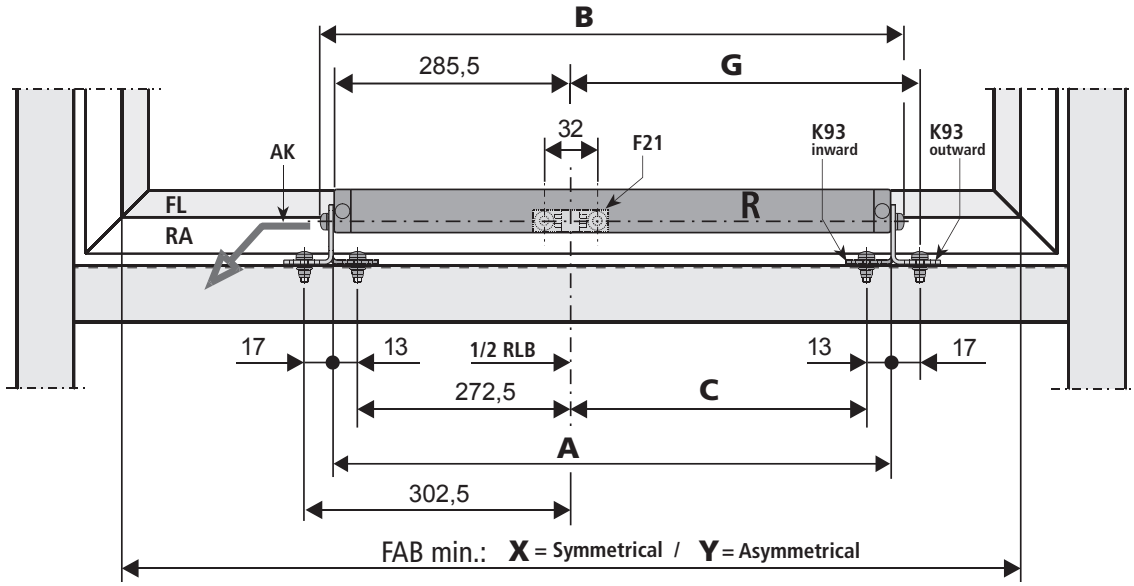


	Frame casement K93 inward		
Stroke	200	400	500
A	641	831	1061
B	655	845	1075
D	615	805	1035
E	350	540	770
X	≥ 640	≥ 830	≥ 1060

	Frame casement K93 outward		
Stroke	200	400	500
A	641	831	1061
B	655	845	1075
E	350	540	770
H	675	865	1095
X	≥ 700	≥ 890	≥ 1120

Window versions:
Bottom hung - outward opening
Top hung - outward opening
Skyskylight dome
Projecting top-hung casement
Roof bottom-hung
Roof top-hung

230V Solo application KS2 xxx / Version: right (Top-hung - outward opening windows)



	Frame casement K93 inward			
Stroke	200	300	400	500
A	476	521	571	686
B	490	535	585	700
C	177,5	222,5	272,5	387,5
X	≥ 570	≥ 570	≥ 570	≥ 800
Y	≥ 475	≥ 520	≥ 570	≥ 685

	Frame casement K93 outward			
Stroke	200	300	400	500
A	476	521	571	686
B	490	535	585	700
G	207,5	252,5	302,5	417,5
X	≥ 630	≥ 630	≥ 630	≥ 860
Y	≥ 535	≥ 580	≥ 630	≥ 745

Window versions:

Bottom hung - outward opening
Top hung - outward opening
Projecting top-hung casement
Skyskylight dome
Roof bottom-hung
Roof top-hung
Version: left

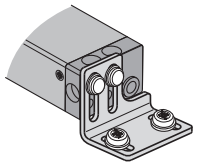
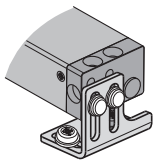
Version left (L): as right (R), but in mirror image

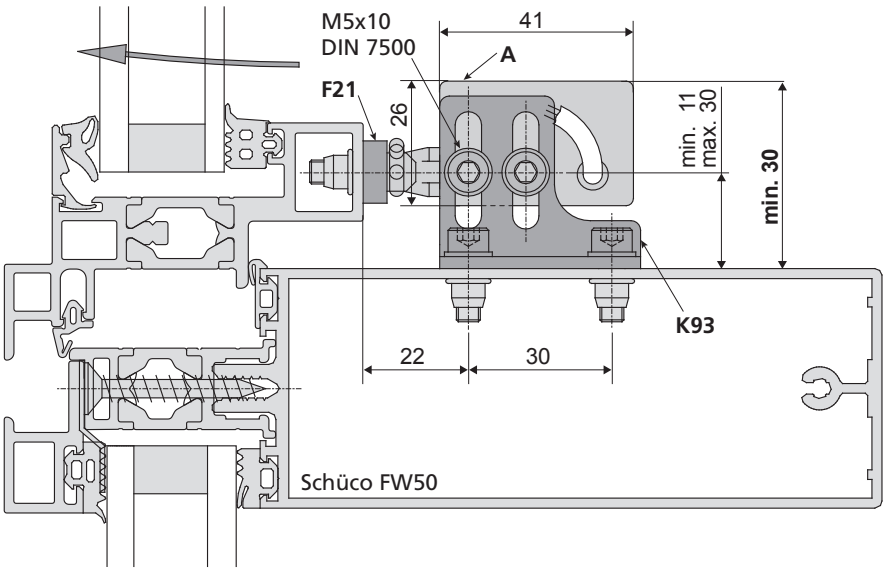
When mounting two drives (tandem operation), a minimum distance of 50 mm between the drives is considered.

24V 230V Pressure load - Transom assembly (Top-hung - outward opening windows)

Frame bracket: K93
Casement bracket: F21
Drive: fixed

Space for console with drive: 30 mm

Holes above (strips facing outward)	Holes below (strips facing inward)
	



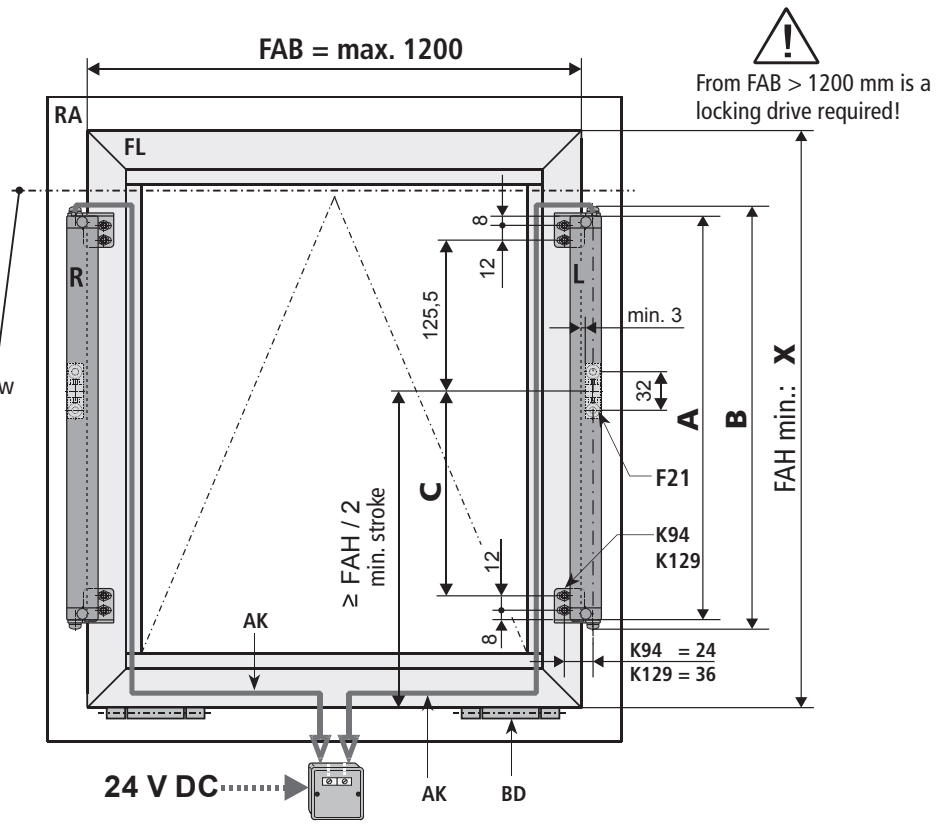
Minimum overall height of casement (FAH)				
Stroke	200	300	400	500
Height	350	400	450	600

Installation step 5L: Hole layout for the frame brackets K94 / K129 and casement bracket F21 (drive at side)

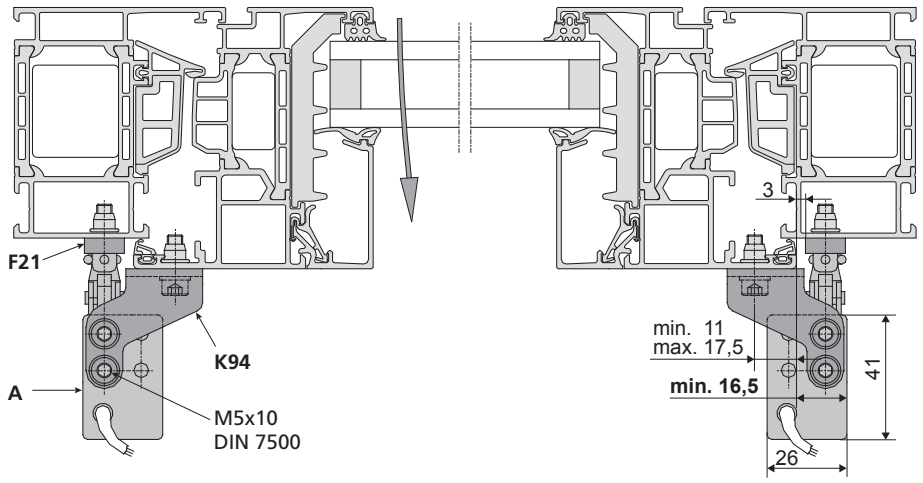
24V

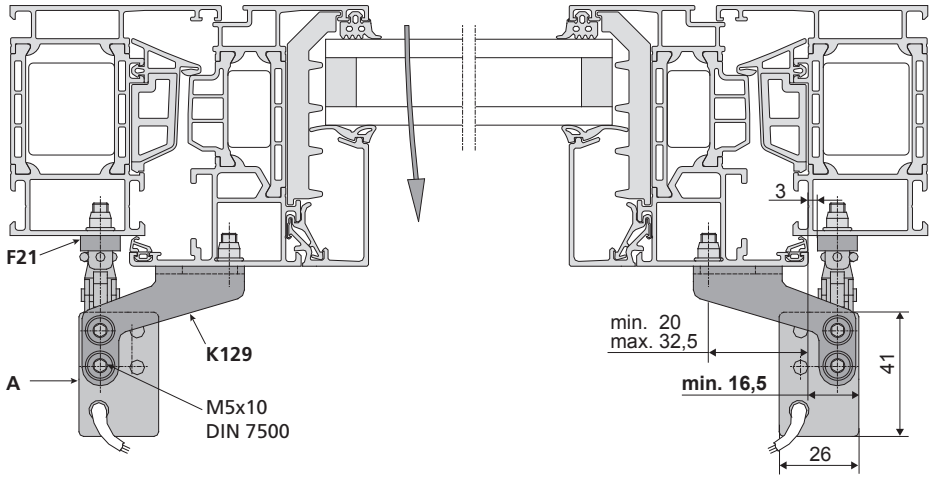
24V Tandem application KS2 xxx / Combination right / left (Bottom-hung - inward opening windows)

Stroke	Window A	B	C	X	Max. opening
200	336	350	170,5	≥ 380	60°
300	381	395	215,5	≥ 470	60°
400	431	445	265,5	≥ 570	60°
500	546	560	380,5	≥ 800	60°
600	546	560	380,5	≥ 800	60°
800	626	640	460,5	≥ 960	60°



- only for bottom-hung casements (inward opening windows)
- respect max. pulling forces of drives.
- cable exit (power supply) on top.
- rigid-backed side of chain upward.
- white wires must be connected.



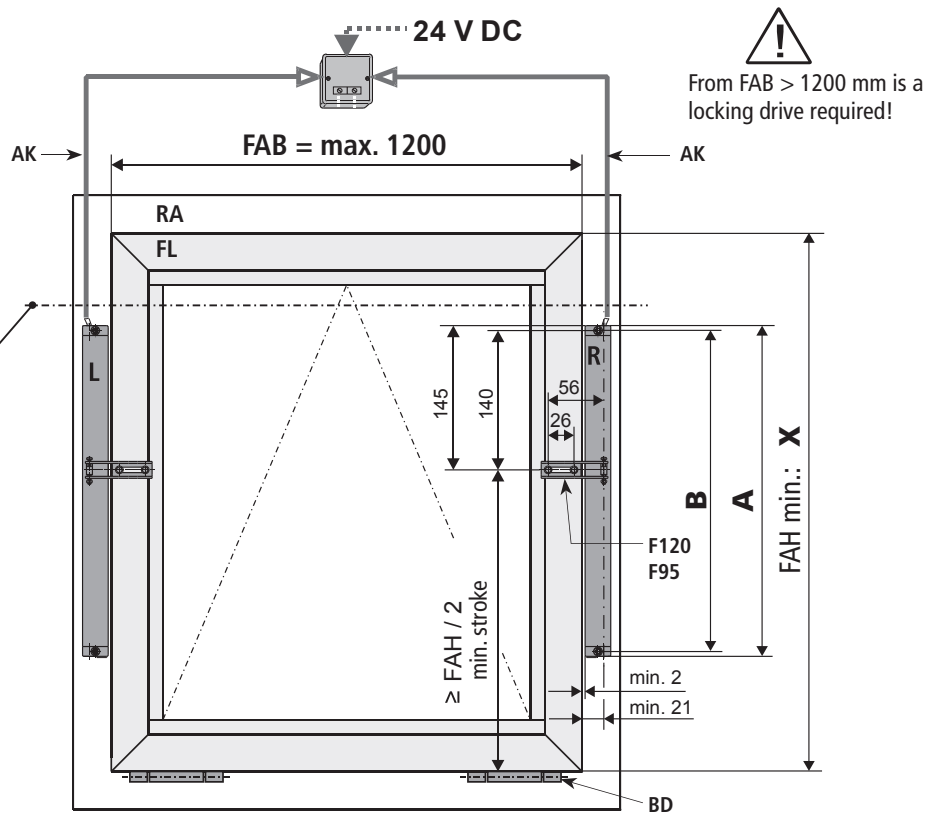


Installation step 5M: Hole layout for the frame brackets F120 / F95 (drive at side)

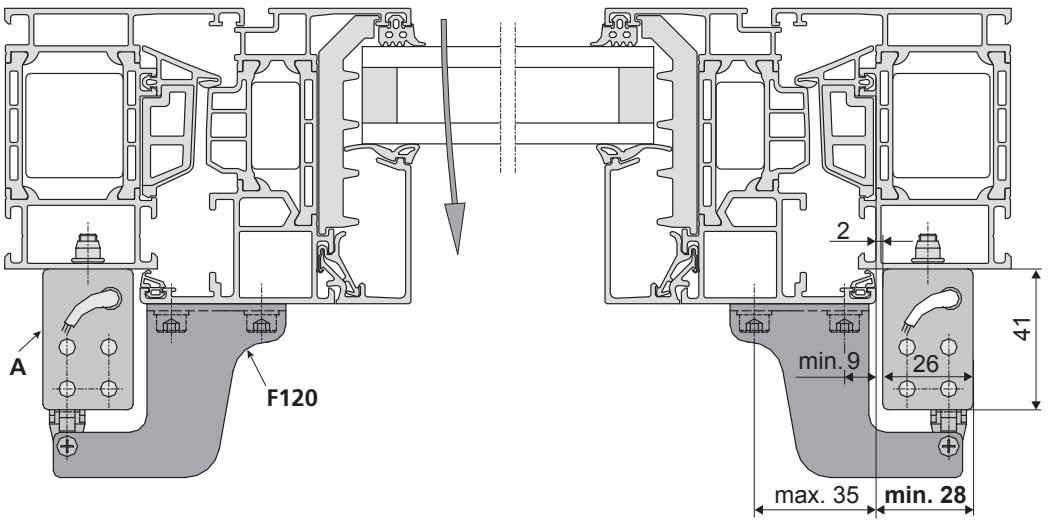
24V

24V **Tandem application KS2 xxx / Combination right / left** **(Bottom-hung - inward opening windows)**

Stroke	Window A	B	X	Max. opening
200	335	325	≥ 380	45°
300	380	370	≥ 470	50°
400	430	420	≥ 570	60°
500	545	535	≥ 800	60°
600	545	535	≥ 800	60°
800	625	615	≥ 960	60°



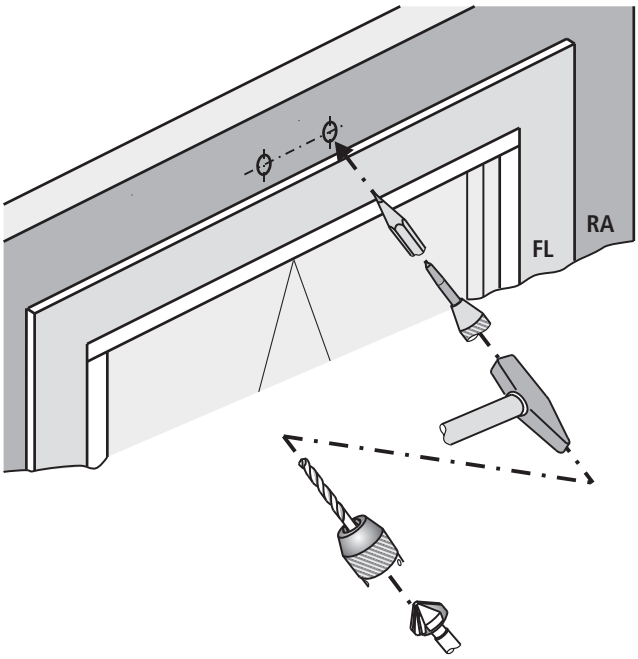
- only for bottom-hung casements (inward opening windows)
- respect max. pulling forces of drives.
- cable exit (power supply) on top.
- rigid-backed side of chain upward.
- white wires must be connected.



Installation step 6: Assembly casement bracket

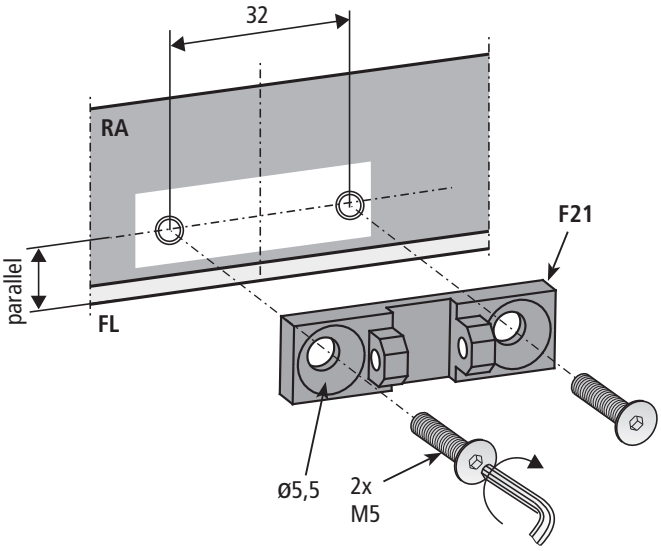
24V **230V**

- Determine fastenings.
- Produce drill holes with appropriate cross-section. For the mounting dimensions please refer to the above-mentioned hole layout drawings (see chapter „Installationstep 3 - 5“) or project-specific documents and drawings).

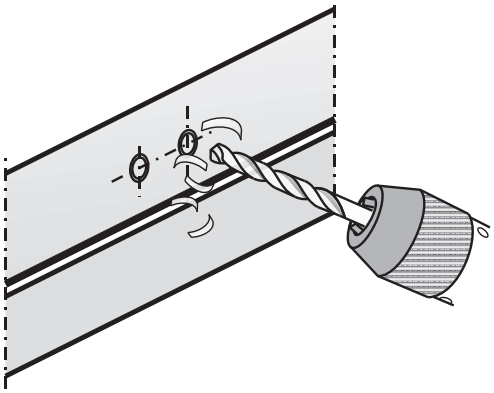


- Fit casement bracket Fxxx.

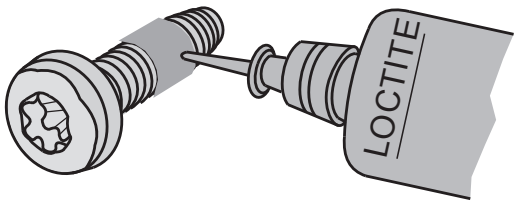
Make sure it is parallel to casement edge.
„Casement bracket“ center and „chain output“ must be in line.



Carefully clear away drilling swarfs to prevent seals from being damaged.
Avoid surface scratches, for example by using masking tape.



- Secure fasteners against loosening; e.g. by applying removable thread-locking compound such as “Loctite”.



24V 230V

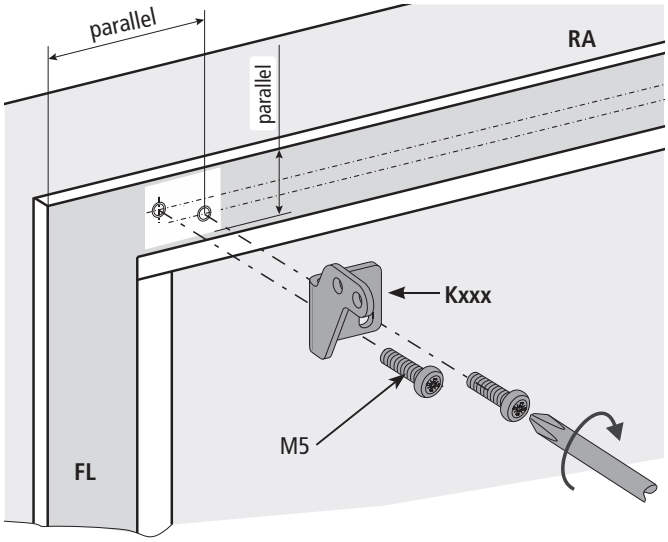
Installation step 7a:

Assembly frame bracket - Drive mounted on the window at the top

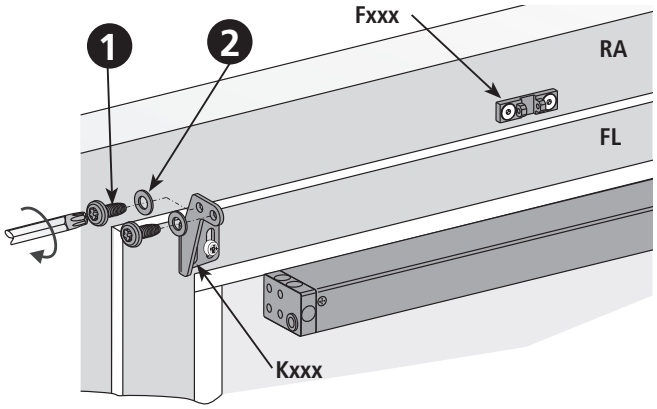
- Produce drill holes with appropriate cross-section. For the mounting dimensions please refer to the above-mentioned hole layout drawings (see chapter „Installationstep 3 - 5“) or project-specific documents and drawings).
- Fit frame brackets (Kxxx).

Make sure they are parallel to casement edge.

Note If necessary, use washers. These are depending on the type of screws used.

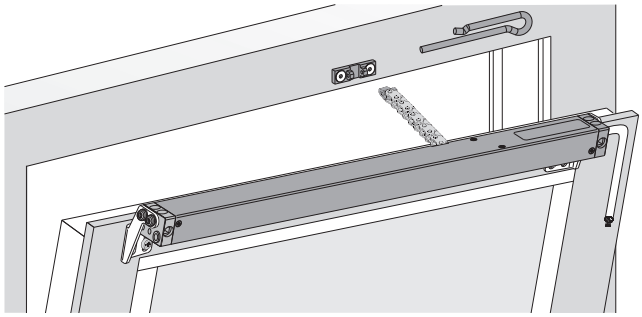


- Attach drive to the frame brackets.
- Insert screws M5 ❶ and washers ❷ and tighten.

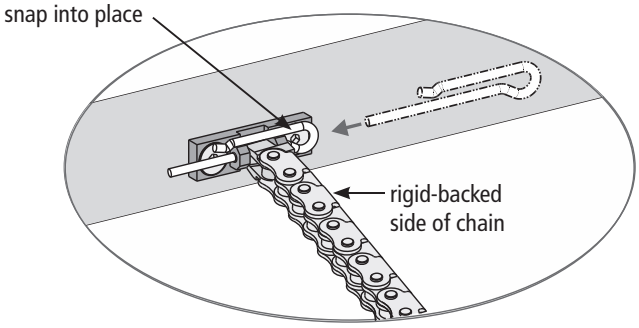


- Connect control voltage (e.g. using a tester) and move out the chain approx. 100 mm.

Note With tandem / triple operation actuate all drives together.



- Secure chain in the casement bracket with spring pin. Insert spring pin from the rigid-backed side of the chain (label side) and snap into place.



Check swiveling area (see chapter „Safety Check and Performing test run“)

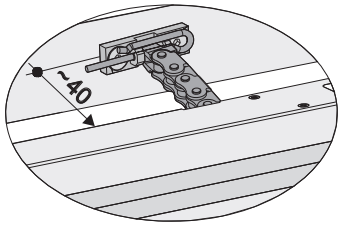
Soft run mode S12

Soft run setting for drives with S12

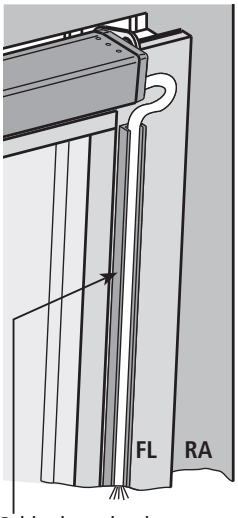
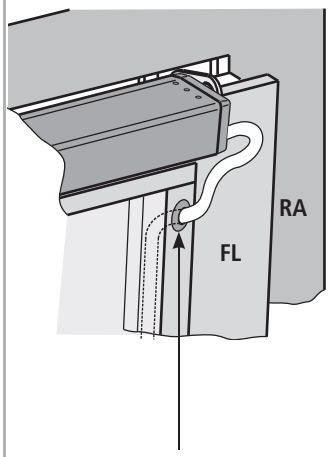
The drive has an electronic position detection. Just before the CLOSED position the chain retracts with reduced speed in the soft run mode, to protect the window and the drive.

- In soft run mode the zero-point - and thus the CLOSE-postion of the window - is recognized.
- The drives with **S12** must turn off in the soft run area (about 40 mm in front of the CLOSE-position).
- With overload and exceeded 40 mm closing, reversing the drive by approximately 10 mm.

S12

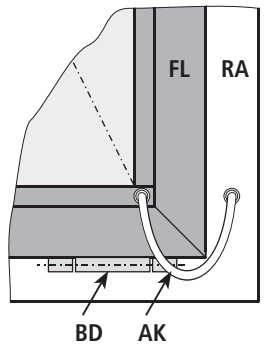
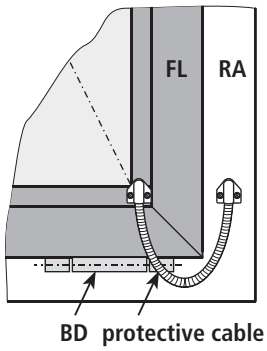


Route cable on or in the casement.

Cable on casement	Cable in glazing bead
	
Cable duct glued on (in addition secured with countersunk screws against breaking away).	Drill hole in glazing bead (cable bushing protects against damage to cable).

Connection cable routing on the casement:
- Cable must be protected against damage (shearing-off, kinking, splitting), i.e. by using bushings.

Upon removal of the glazing bead is the danger that the glass may fall.

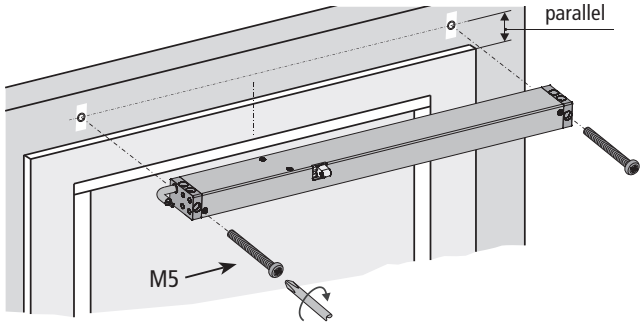
Cable crossover without protective cable hose	Cable crossover with protective cable hose
	

Connection cable routing on the hinge side:
- Make sure that during opening or closing procedure the cable will not be damaged by shearing-off, kinking, crushing.
- Protect cable feedthrough in profile e.g. by using cable bushings, cable transitions.

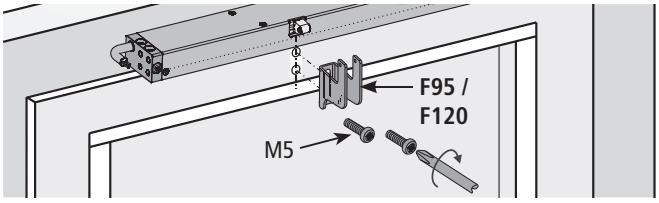
Installation step 7b: 24V 230V
Fixed assembly with Z-frame bracket

- Produce drill holes with appropriate cross-section. For the mounting dimensions please refer to the above-mentioned hole layout drawings (see chapter „Installationstep 3 - 5“) or project-specific documents and drawings).
- Screw drive onto window frame.

Make sure they are parallel to casement edge. The drive body must lie completely flush on the window frame surface.



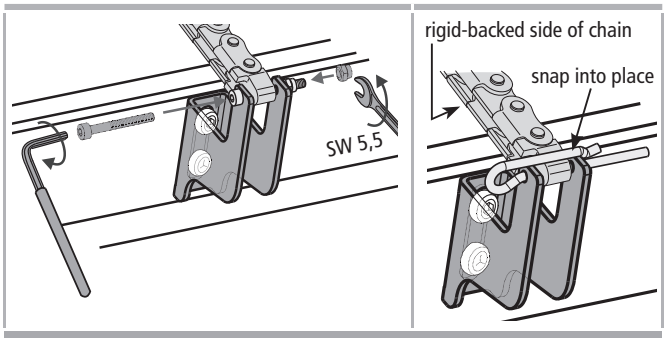
- Screw Z-frame bracket (F95 / F120) onto casement. If necessary, use washers.



- Connect control voltage (e.g. using a tester) and move out the chain approx. 100 mm.

Note With tandem / triple operation actuate all drives together.

- Secure chain in the casement bracket:
  - with screw and nut or
  - with spring pin. Insert spring pin from the rigid-backed side of the chain (label side) and snap into place.



Note the soft run mode at drives with **S12** (see chapter „Installation step 7a“).

Check swiveling area (see chapter „Safety Check and Performing test run“)

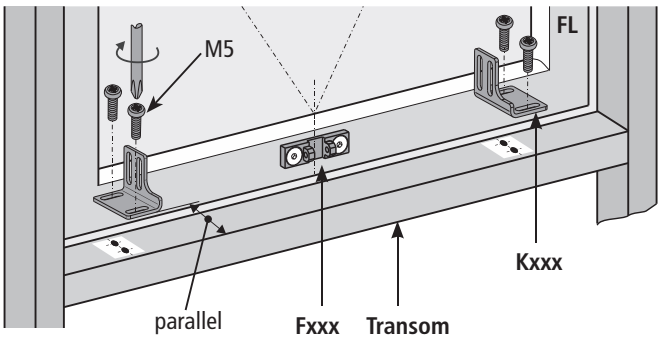
24V 230V

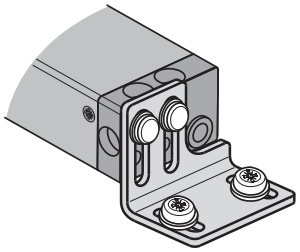
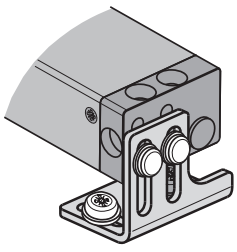
Installation step 7c:
Assembly frame bracket - Drive mounted on the window at the Bottom

- Produce drill holes with appropriate cross-section. For the mounting dimensions please refer to the above-mentioned hole layout drawings (see chapter „Installationstep 3 - 5“) or project-specific documents and drawings).
- Fit frame brackets (Kxxx).

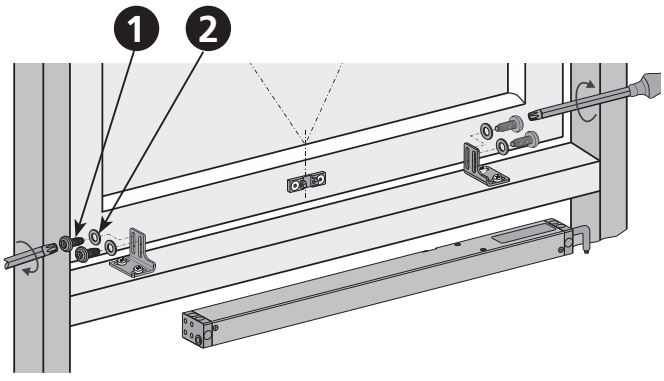
Make sure they are parallel to casement edge.

Note If necessary, use washers. These are depending on the type of screws used.



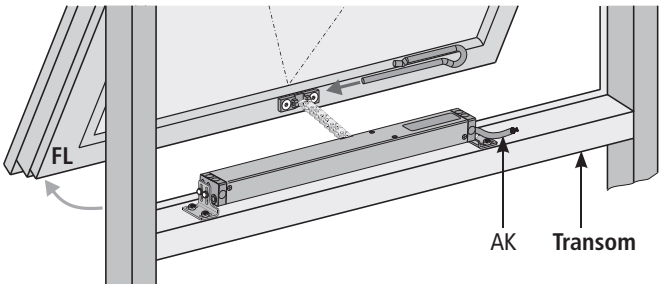
Holes above (strips facing outward)	Holes below (strips facing inward)
	

- Attach drive to the frame brackets.
- Insert screws M5 ❶ and washers ❷ and tighten.

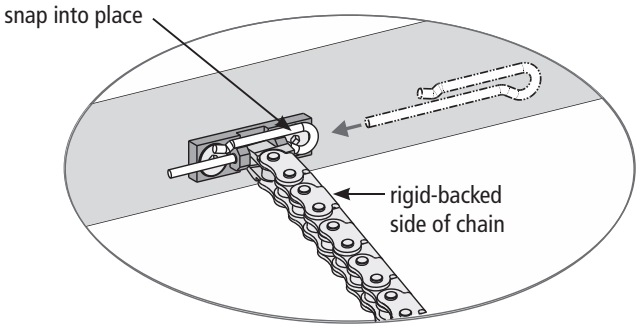


- Connect control voltage (e.g. using a tester) and move out the chain approx. 100 mm.

Note With tandem / triple operation actuate all drives together.

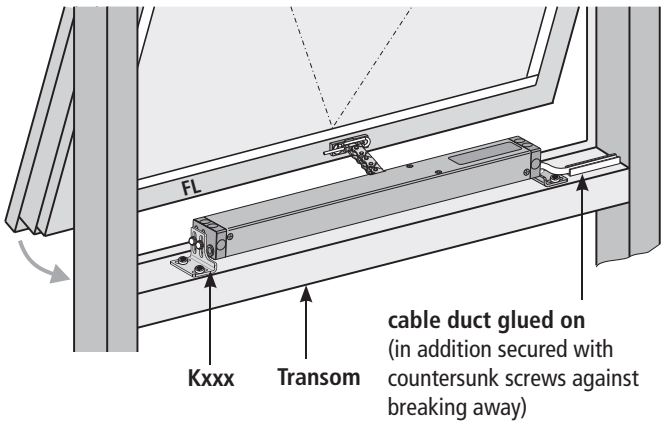


- Secure chain in the casement bracket with spring pin. Insert spring pin from the rigid-backed side of the chain (label side) and snap into place.



Note Note the soft run mode at drives with **S12** (see chapter „Installation step 7a“).

- Route cable on the frame or mullion/transom.
  Cable must be protected against damage (shearing-off, kinking, splitting).



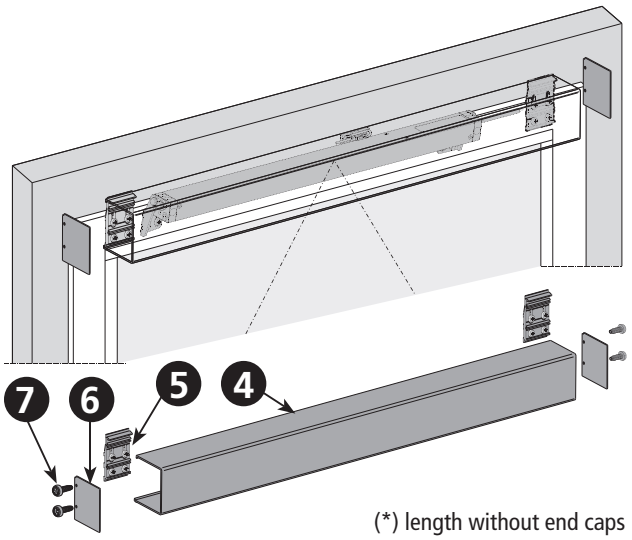
Check swiveling area (see chapter „Safety Check and Performing test run“)

INSTALLATION STEP 8A: CONCEALING THE DRIVE

24V 230V

Cover profile set AP KS2

Part.-No.:	**523952 L = 1,5 m, incl. 2x profile bracket (*)** **523954 L = 2,0 m, incl. 3x profile bracket (*)** **523956 L = 2,9 m, incl. 4x profile bracket (*)**
Application:	Cover profile for surface mounted drives KS2 with brackets **K94**, **K129**, **K130**. Profile length adjustable to the lenght of the drives (end caps recommended) or of the casement (without end caps).
Material:	see detailled description of componets
Equipment:	inclusive profile brackets, without end caps.

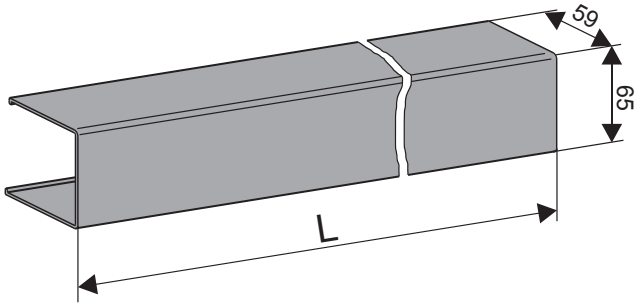


(*) length without end caps

Cover profile

Part.-No.:	**523951**
Application:	Cover profile for drives KS2 for cutting on site.
Material / Finish:	aluminium (natural anodized)
Equipment:	without profile brackets, without end caps

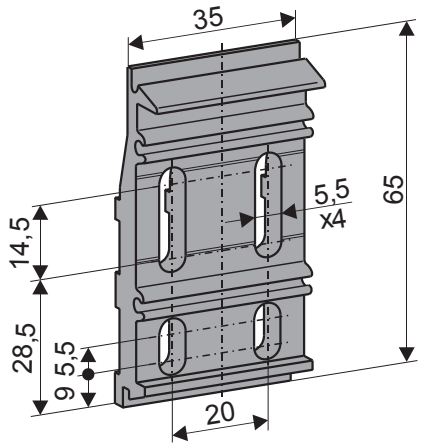
4



Profile bracket

Part.-No.:	**523948**
Application:	Profile bracket for KS2 cover profile < 2 m lenght: 2 pieces > 2 m lenght: 3 – 4 pieces
Material / Finish:	aluminium (natural anodized)
Equipment:	1 piece (for fixing the cover profile)

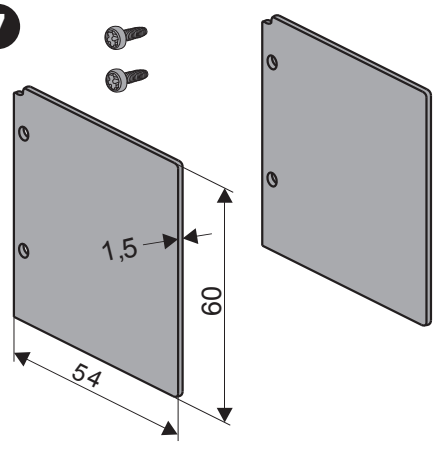
5



End caps

Part.-No.:	**523950**
Application:	End caps for KS2 cover profile.
Material / Finish:	aluminium (natural anodized)
Equipment:	2 end caps 4x screw M3x12 (Taptite)

6 7

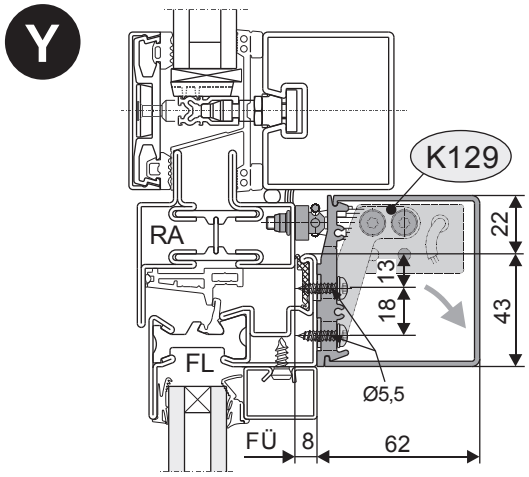


Application examples

24V **230V**

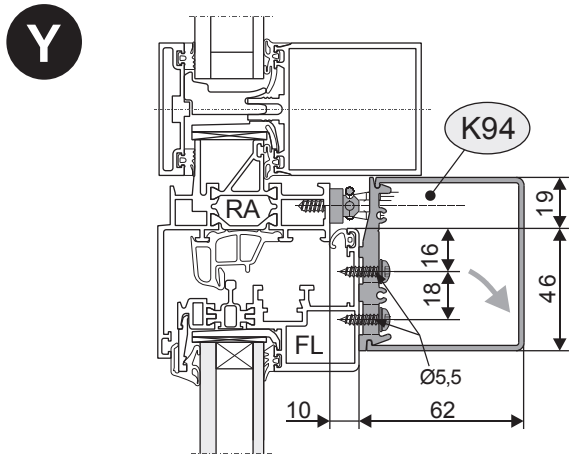
Application examples on windows

Bottom-hung inward opening
Casement assembly



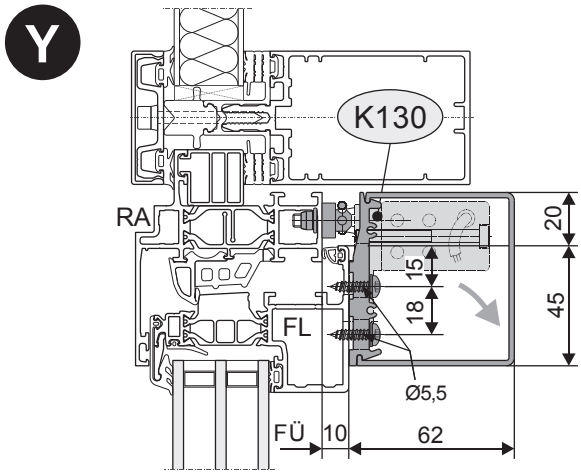
Detail of mounting on steel window

Bottom-hung inward opening
Casement assembly



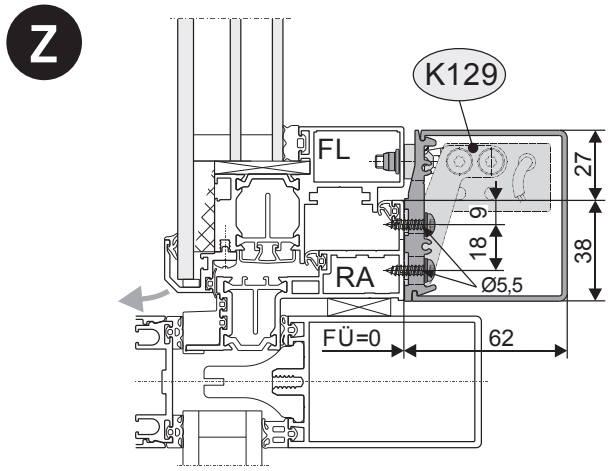
Detail of mounting on aluminium window

Bottom-hung inward opening
Casement assembly



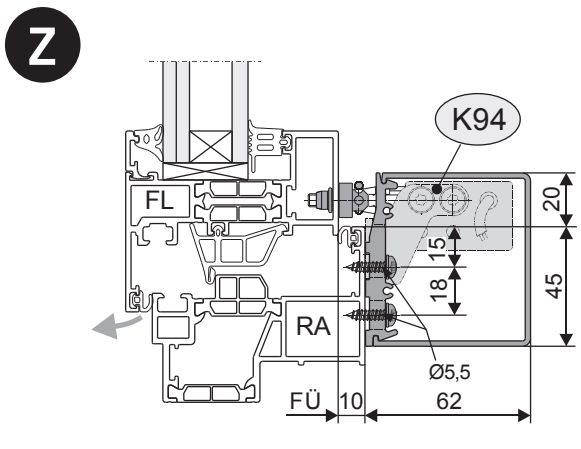
Detail of mounting on aluminium window

Top-hung outward opening
Frame assembly



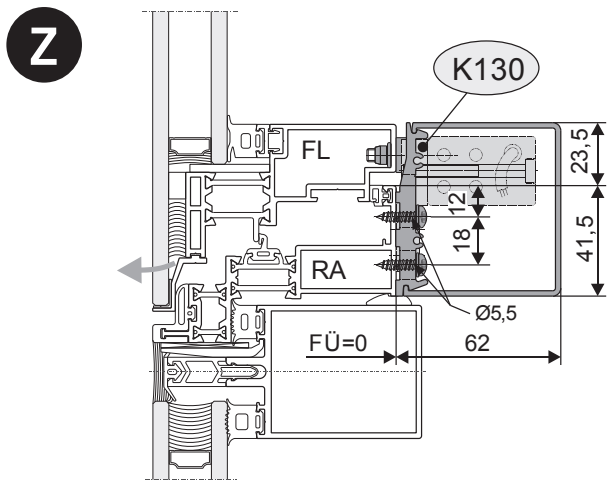
Detail of mounting on aluminium window

Top-hung outward opening
Frame assembly



Detail of mounting on aluminium window

Top-hung outward opening
Frame assembly



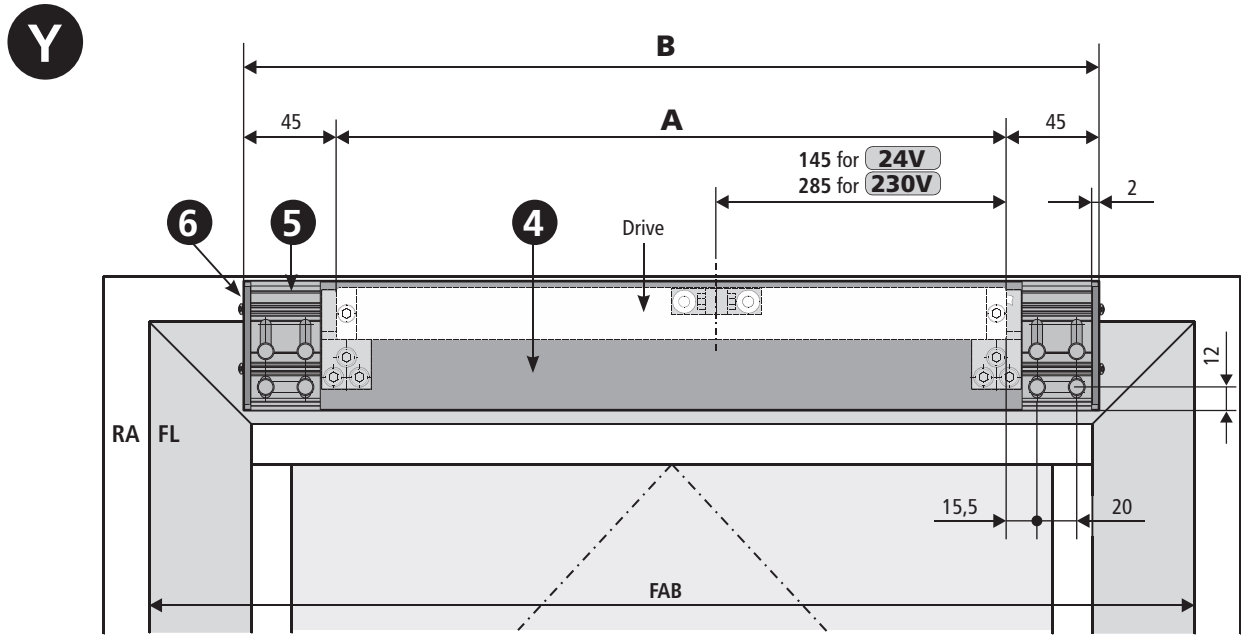
Detail of mounting on aluminium window

Cut length and Hole layout

24V **230V**

Cut length and hole layout

(Bottom-hung - inward opening windows / Casement assembly)

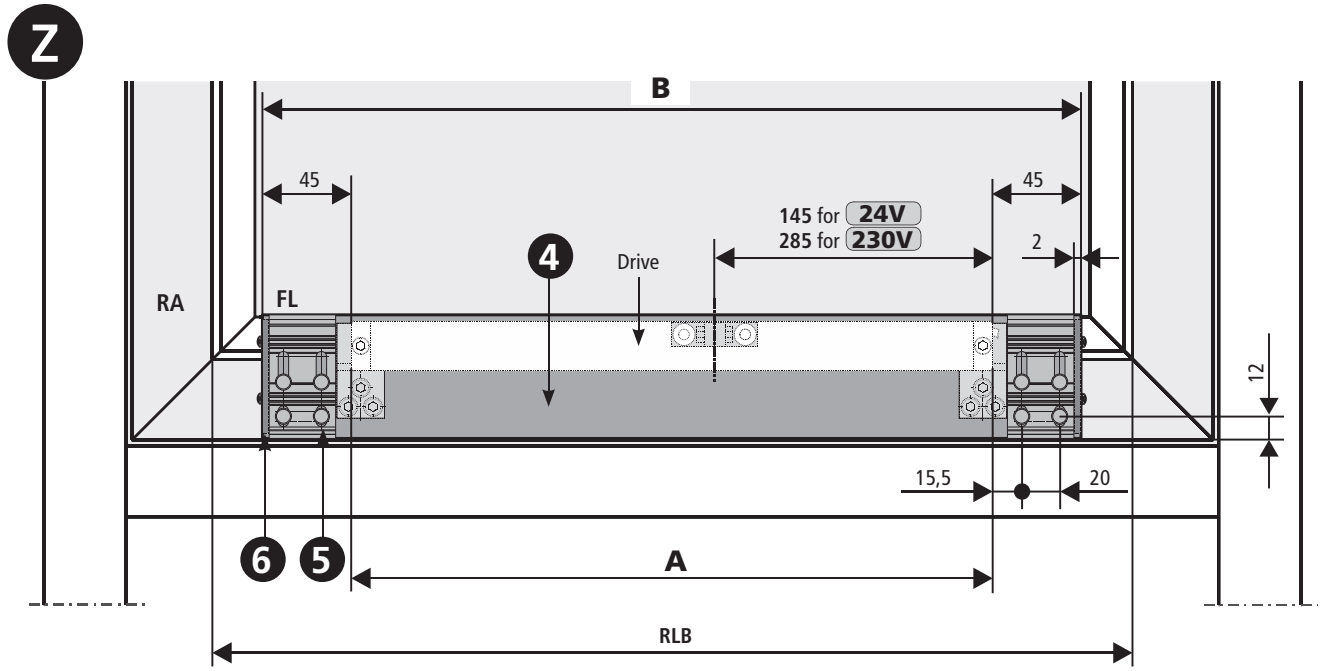


24V						
Stroke	200	300	400	500	600	800
A	335	380	430	545	545	625
B	425	470	520	635	635	715

230V						
Stroke	200	300	400	500	600	800
A	475	520	570	685	685	765
B	565	610	660	775	775	855

Cut length and hole layout

Friction hinged windows / Top hung - outward opening windows / Frame assembly



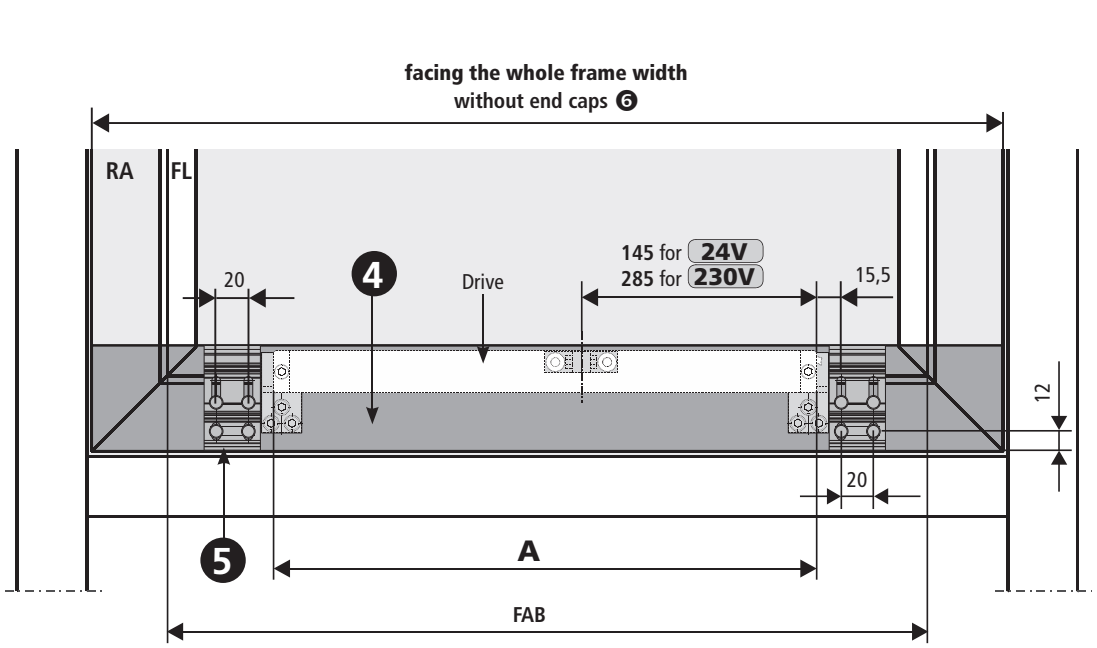
24V						
Stroke	200	300	400	500	600	800
A	335	380	430	545	545	625
B	425	470	520	635	635	715

230V						
Stroke	200	300	400	500	600	800
A	475	520	570	685	685	765
B	565	610	660	775	775	855

Hole layout

24V 230V

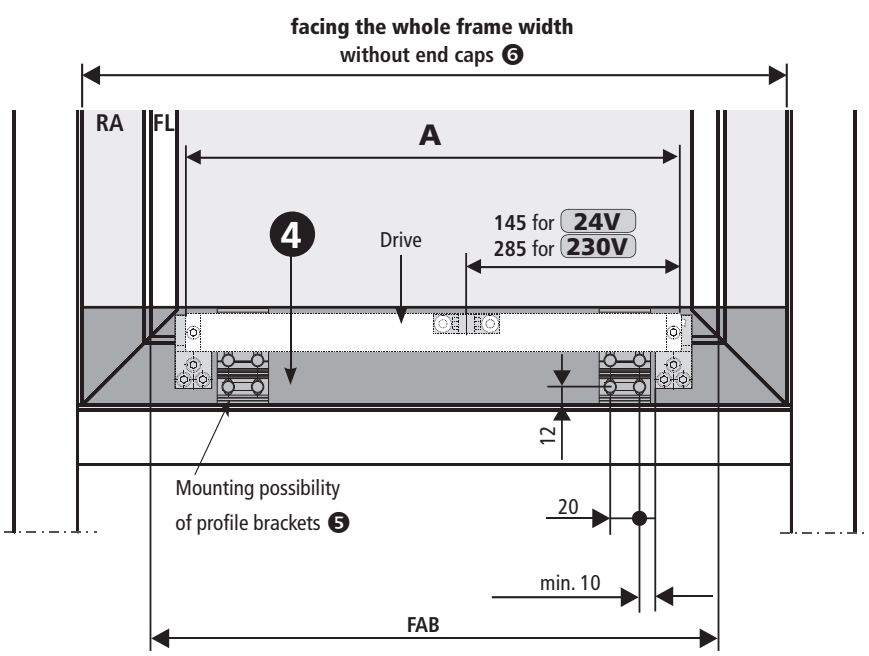
Cut length and hole layout — Friction hinged windows / Top hung - outward opening windows / Casement assembly



24V						
Stroke	200	300	400	500	600	800
A	335	380	430	545	545	625

230V						
Stroke	200	300	400	500	600	800
A	475	520	570	685	685	765

Cut length and hole layout — Friction hinged windows / Top hung - outward opening windows / Frame assembly



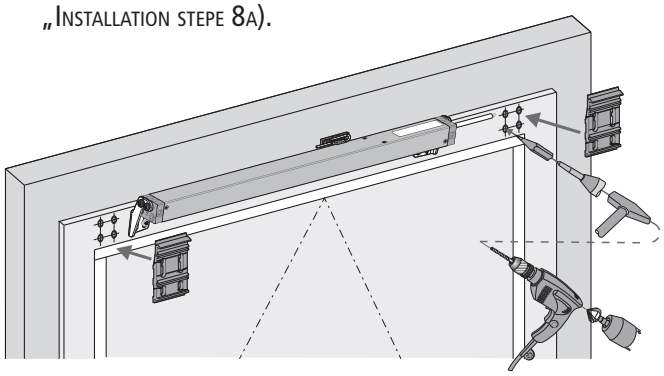
24V						
Stroke	200	300	400	500	600	800
A	335	380	430	545	545	625

230V						
Stroke	200	300	400	500	600	800
A	475	520	570	685	685	765

INSTALLATION STEP 8B: Installing the cover profile

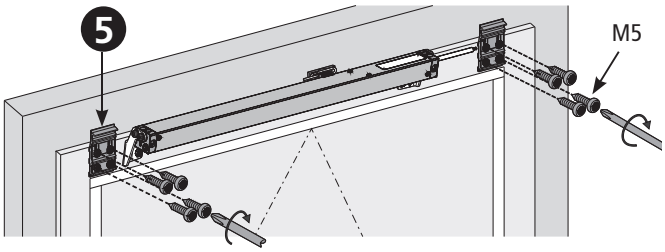
24V 230V

- Determine fastenings.
- Produce drill holes with appropriate cross-section. For the mounting dimensions please refer to the above-mentioned hole layout drawings (see chapter „INSTALLATION STEPE 8A).



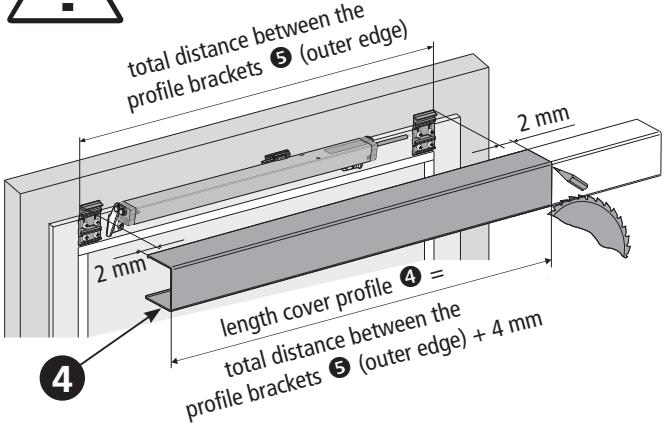
Carefully clear away drilling swarfs to prevent seals from being damaged.
Avoid surface scratches, for example by using masking tape.

- Screw on profile brackets ❺.
  Number of profile brackets ❺ depends on the length of the cover profile ❹: < 2 m length = 2 pieces
  > 2 m length = 3 - 4 pieces

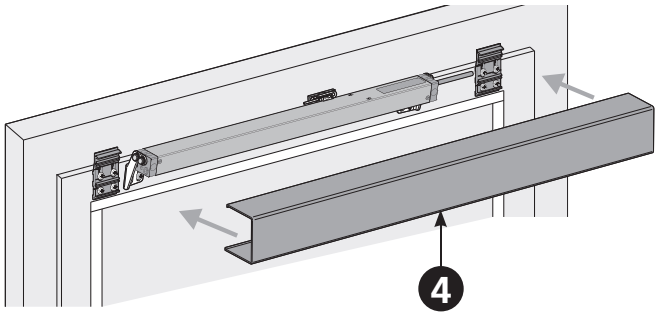


- Determine length of cover profile ❹:
  Length cover profile ❹ = total distance between the profile brackets ❺ (outer edge) + 4 mm.
- Use a saw to shorten the cover profile ❹ to the required length.
- Deburr saw cut edge.

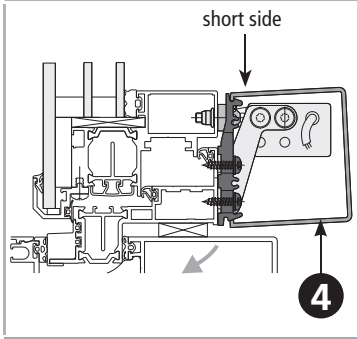
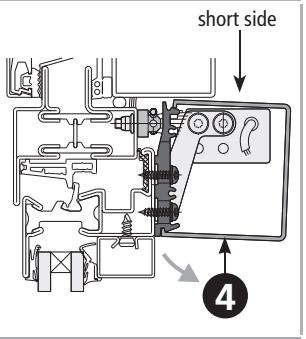
Ensure that you saw the profile perpendicular.



- Align the cover profile ❹ on the profile brackets ❺ proportionally and centrally and fit.

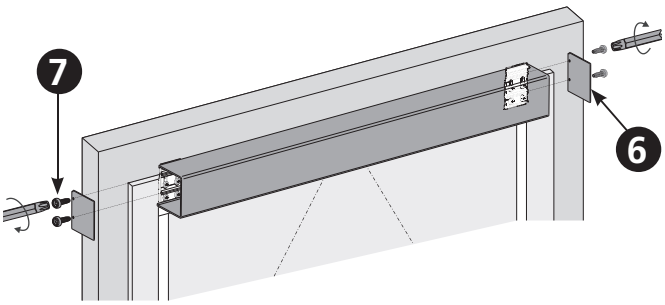


NOTE Ensure the correct positioning of the cover profile ❹ (short side facing upwards).

Top hung / projecting top-hung casement - outward opening	Bottom-hung casement inward opening
	

- Attach end caps ❻ and with screw M3 ❼ fasten.

NOTE Open casement electrically if appropriate (to have a better access to the screws ❼).



The end cap ❻ it exactly into the cover profile ❹ uand form a flush edge. In the case of covers between post and post end caps ❻ are not required.

Installation step 9: Electric connetction

24V **230V**

Make sure when establishing the connection that there is no voltage at the terminals!
Unused wires must be safely insulated!

The running direction of the drive may be changed by interchanging (polarity reversal) the wires **„BN – (brown)"** - **„BU – (blue)"**.

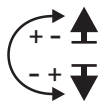
Wire colour coding	
Colour	**DIN IEC 757**
black	BK
white	WH
brown	BN
blue	BU
green / yellow	GN / YE
green	GN
violet	VT
grey	GY

Direction of travel

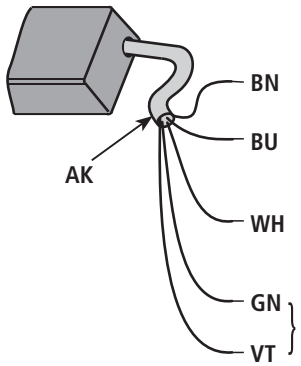
OPEN ▲

CLOSE ▼

polarity reversal



Connection assignment 24V

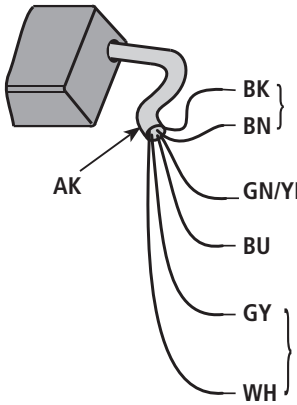


	▲	▼
BN	+	-
BU	-	+

WH is used for communication, with synchronized multi-drive operation

Version Z:
contact max. 24 V, 500 mA (min. 10mA)

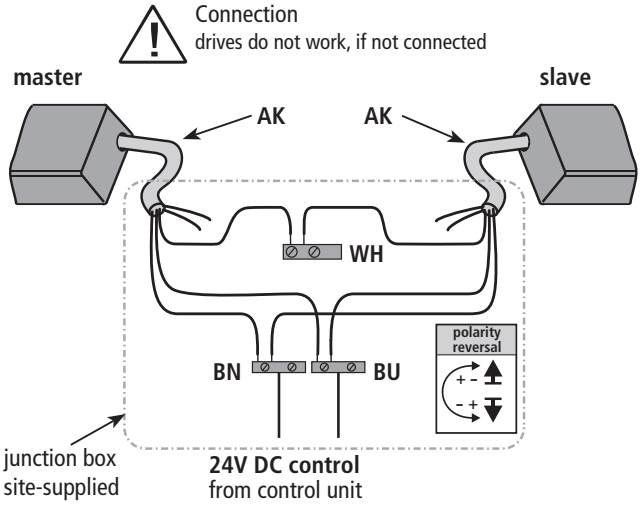
Connection assignment 230V



	▲	▼
	Open	Close
L	BN	BK

WH + GY for Version Z: (optional)
contakt max. 24V, 500 mA (min. 10mA)

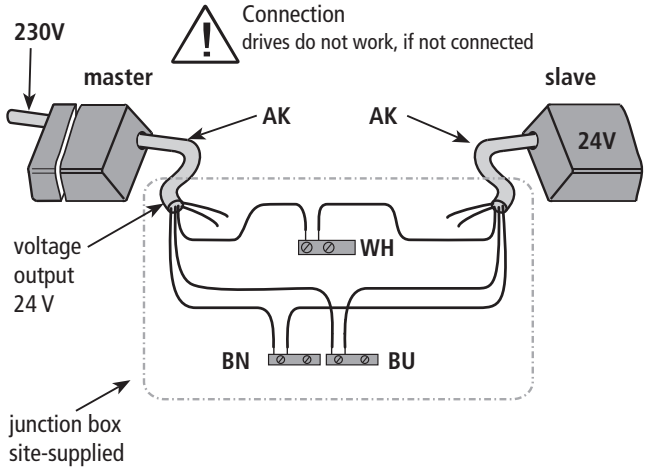
Multi-drive operation with master and slave 24V



WH is used for communication, with synchronized multi-drive operation.

Optional: 1 to 4 drives (at KS2 Twin 1 or 2 drives) and max. 2 locking drives are possible.

Multi-drive operation with master and slave Set 230V / 24V



WH is used for communication, with synchronized multi-drive operation.

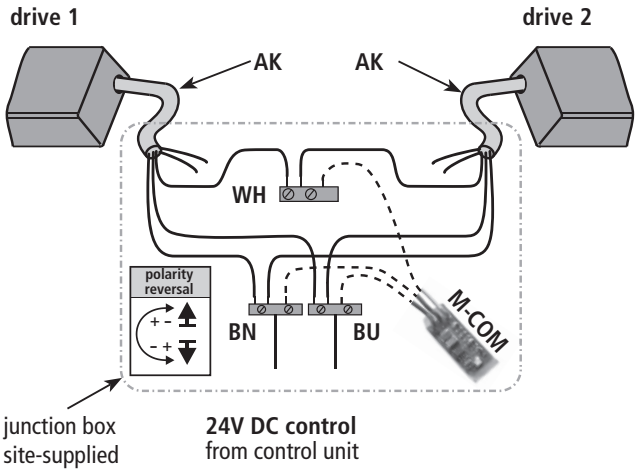
Optional: 1 to 4 drives (at KS2 Twin 1 or 2 drives) and max. 2 locking drives are possible.

ELECTRIC CONNETCTION

24V 230V

Multi-drive operation with M-COM — 24V

Connection
no synchronous running , if not connected



WH is used for communication,
with synchronized multi-drive operation.

Optional: 1 to 4 drives (at KS2 Twin 1 or 2 drives) and max. 2 locking drives are possible.

M-COM (Main control unit) — 24V

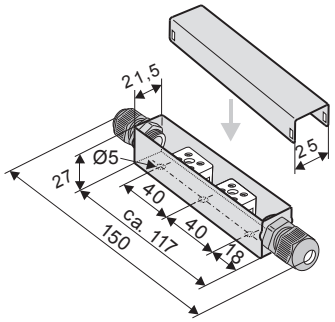
Order number:	**524177**
Application:	Main control unit for the automatic configuration and monitoring of max. 4 opening / 2 locking drives type S12 / S3 (software version SW-V2) in multi-drive systems.
Rated voltage:	24V DC +/- 20%, (max. 2 Vss)
Current consumption:	<12 mA
Drive type:	S12
Protection class:	IP30 rubber jacket
Ambient temperature:	0 °C ... + 70 °C
Dimensions:	45 x 17 x 6 mm
Connecting wires:	3 wires 0,5 mm² x 50 mm

Feature / Equipment:
printed circuit board with connecting wires for integration in site-supplied junction box.

Cable junction box (for renewal) — 24V

Order number:	**513344**
Application:	to extend a drive cable
Rated voltage:	only for low voltage to max. 50V DC/AC
Material:	stainless steel (V2A)
Protection class:	IP 40
Dimensions:	25 x 27 x 150 mm
Equipment:	with cable gland PG9 (grey) including strain relief, with loose ceramic terminals.

For multiple operation of the application is possible only with the master and slave.
(without M-COM)



UniPC with configuration interface — 24V 230V

Order number:	**524178**
Application:	Hard- and software for configuration of drives supplied by Aumüller Aumatic GmbH
Rated voltage.	24V DC +/-20%
Parameterizable drives:	24V DC type MP, S3, S12, S12 V.2 230V AC type S12, S12 V.2
Scope of delivery:	software UniPC (Downloadlink*), Interface "ParInt", USB cable, connection cable * http://www.aumueller-gmbh.de/Downloads

Features / Equipment:
Power supply 24V DC is not included in the scope of delivery!
Any extended settings require a software licence.

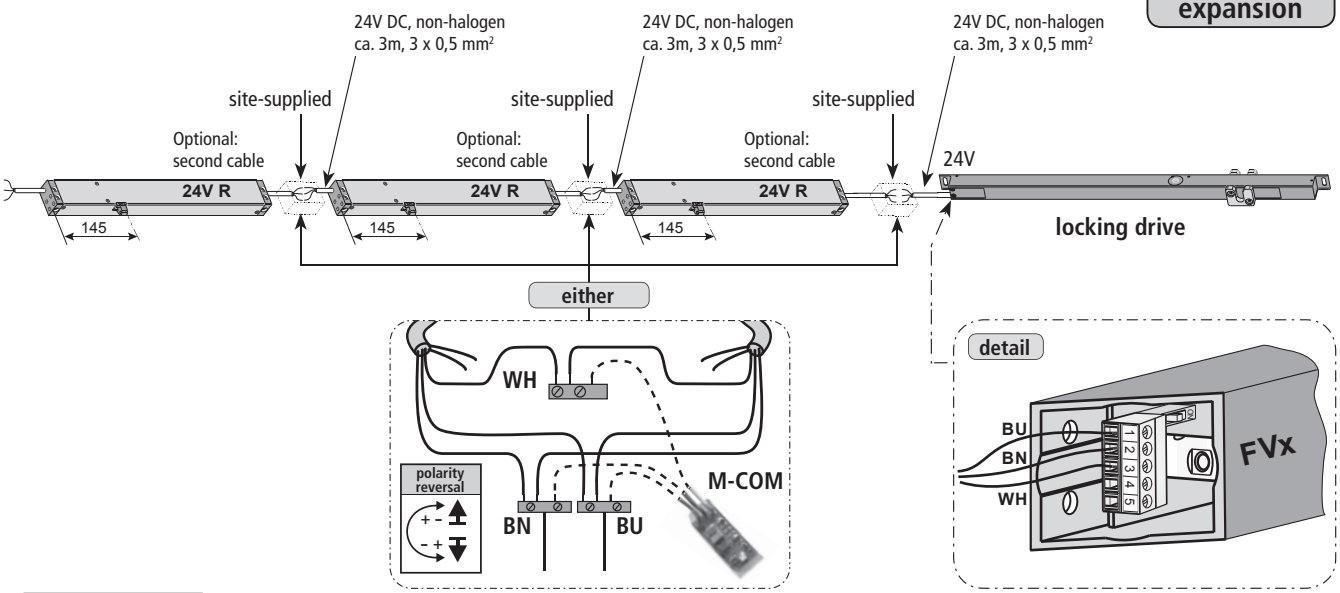
Any reconfiguration of a drive is entirely at the user's own risk and responsibility.

Electrical connection configured with M-COM

Individual expansion: Multi-drive operation with M-COM and locking drive

24V

Individual expansion



Note

A maximum of **three single-drive** and **one locking drive** are possible.
Optional: Second drive-cable.
Configuration is done by **M-COM**.

BN =	brown
BU =	blue
WH =	white

Multi-drive operation: Drive „Set A" with M-COM and locking drive

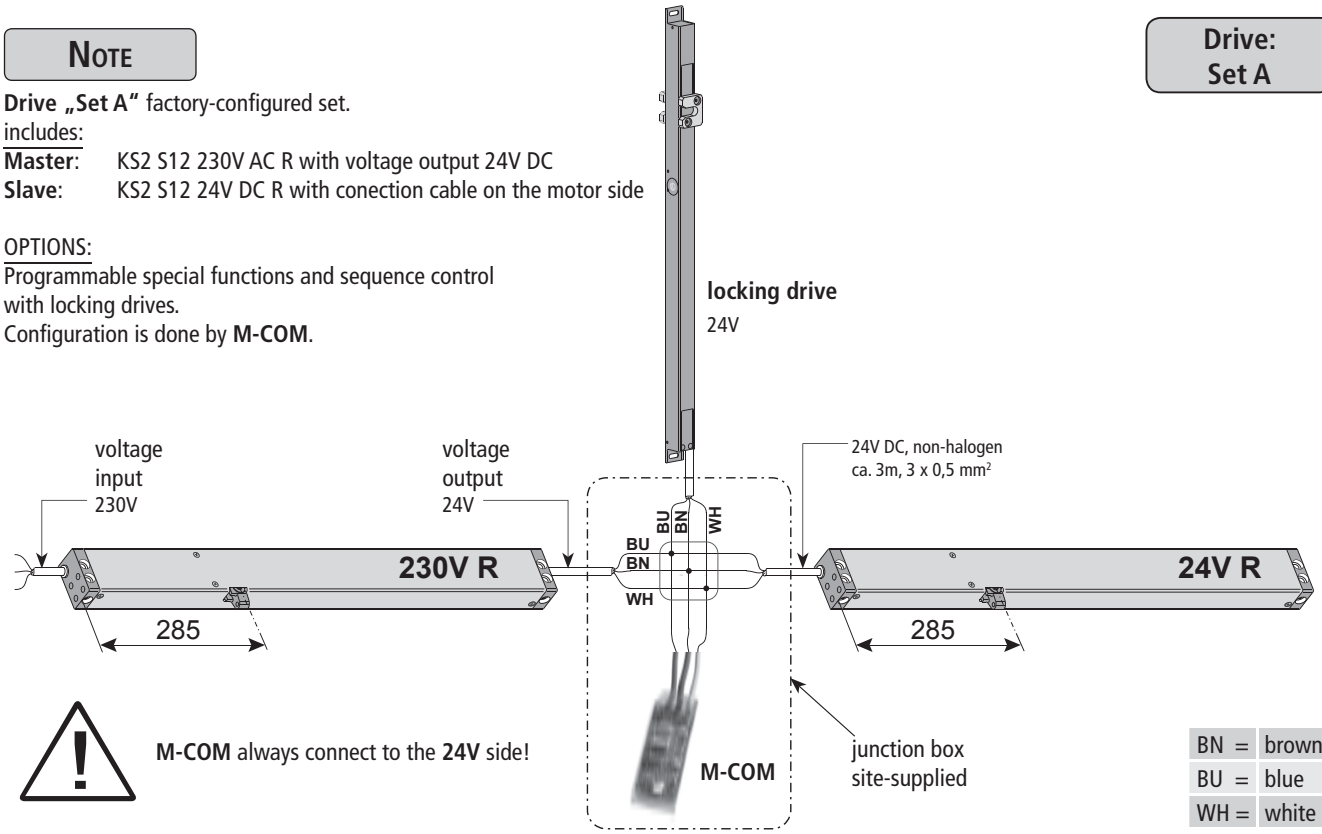
230V/24V

Drive: Set A

Note

Drive „Set A" factory-configured set.
includes:
Master: KS2 S12 230V AC R with voltage output 24V DC
Slave: KS2 S12 24V DC R with conection cable on the motor side

OPTIONS:
Programmable special functions and sequence control with locking drives.
Configuration is done by **M-COM**.



M-COM always connect to the **24V** side!

BN =	brown
BU =	blue
WH =	white

24V

Instructions on connection

Formula to calculate
the required wire cross-section of a infeed line

24V

$$A\ mm^2 = \frac{I_{A\ (total)} * L_{m\ (length\ infeed\ line)} * 2}{2{,}0^{V}\ (voltage\ drop) * 56\ m / (\Omega * mm^2)}$$

Calculation example

Available data:

- cut-off current per drive (i. e. 2 x 4.0A) from data sheet
- length to be bridged from the last window to the control unit (i. e. 10 meters)

$$A = \frac{(2 * 4{,}0A) * 10m * 2}{2{,}0V * 56m / (\Omega * mm^2)}$$

A = 1,42mm² -> **1,5mm²** chosen

Comply with the local regulations and directives for fire behaviour of building materials and building components (E30, E60, E90) and erection of power installations with rated voltages below 1000V!

Recommendation:
In choosing a cable, select the next higher wire cross section to anticipate possible later changes to the system (e.g. replacement of drives with greater current consumption or extension of the SHEV or ventilation line.

Connecting drive cable

- Avoid any installation area with large temperature differences, risk of water condensation
- Close to the window (shall be easily accessible later on for repair work)
- Ensure that a later removal of the connection cable is possible
- Observe maximum cable length of drives (standard length approx. 3 meters)

Safety check and Performing test run

24V 230V

Check safety of the assembled system and perform test run and commissioning.

Safety check:

- Connect operating voltage
- Re-check fastenings (casement bracket, frame bracket) and re-tighten if necessary

Performing test run:

- visual check of casement motion
- stop immediately in case of mulfunction
- make sure there is no collision with facade construction and, if necessary, correct assembly or re-configure

aumüller

24V 230V

Troublshooting, service and repair

Proper repair of a defective drive cannot be performed by the contractor or end-user and is therefore not permissible. Repairs can only be carried out by the manufacturer or by a specialist company authorized by the manufacturer.
Unauthorized opening or manipulation of the drive causes loss of warranty.

1. Exchange a faulty drive or have it repaired by the manufacturer.
2. If problems occur during installation or normal operation, use the following table for troubleshooting.

Problem	Possible causes	Possible solutions
Drive does not start	• Duration of mains power supply too short	• Adjust supply voltage as specified in the technical documentation
	• Drive run direction not correct	• Check drive cables change polarity
	• Connecting cable not connected	• Check all connection cables
	• Power supply / Control Unit voltage incorrect, too high or too low (see data sheet)	• Check power supply unit and replace if necessary
	• No mains supply to power supply unit / Control Unit (no voltage)	• Connect power supply
	• Drive has shut down on overload	• First move drive in CLOSE position
Drive doesn't start after having been in operation several times	• Operating time has been exceeded, drive has been overheated	• Wait until drive has cooled down and start again
	• See possible solutions above associated with „Drive doesn't start"	• See possible solutions associated with: "Drive doesn't start"
Drive doesn't close	• Closing edge safety mechanism has been triggered	• Release safety area for operation and reset the safety edge
	• See possible solutions above associated with „Drive doesn't start"	• See possible solutions associated with: "Drive doesn't start"
Drive travels uncontrolled in open and close direction	• Residual ripple of power supply / control unit too hight	• Adjust drive voltage to the required value of drive. (values see data sheet of drive)
	• Fault in power supply unit / control unit	• Check output voltage of power supply unit or control unit
Drive closes, but after about 10 mm the drive open	• Close the window outside the 40 mm (Soft run mode).	• Drive mounted so, that the closing process takes place within the 40 mm (e.g. use spacer under the casement bracket).

Maintenance and modification

Prior to any maintenance work or modification of the system (e.g. exchange of the drive) the mains voltage and – where available – the batteries shall be disconnected in all poles and secured against unintended operation (lock in separated position).
Lasting functionality and safety of the drive require maintenance by specialized staff at regular intervals (in the case of SHEV systems the legal requirement is once a year). Check the system for operational availability on a regular basis. This is also recommended for a system with purely natural ventilation. At short intervals, check system for imbalance and signs of wear or damage of cables, springs and fasteners.
Remove any contamination from the drive when servicing the system. Check mountings and clamping screws for tight fit. Test the devices by opening and closing them in test runs.
The drive itself is maintenance-free.
Faulty devices may only be repaired in our plant. Only original parts from the manufacturer may be used. If the mains cable is damaged it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid hazards.
We recommend a scheduled Maintenance Agreement.
When cleaning the window, make sure that no water or cleaning agents reach the drives.
Protect the drives from dirt and dust during construction phase.

Take all safety-related measures
required during servicing, in particular protective measures against falling, finger crushing and safe access to the work place.

1. Drive / open the power-operated casement to its full opening width (SHEV or ventilation angle).
2. Disconnect the system from the power supply, deactivate batteries, where appropriate, and secure against automatic or manual release.
3. Inspect window and fittings for any damage.
4. Check all mechanical fixings (observe torque specifications in the assembly instruction).
5. Check electric drives for any damage and dirt.
6. Check connections cables (drive cables) for
   - tightness of cable gland
   - operability of strain relief
   - damages
7. Check smooth movement of the hinges and fittings and re-adjust, if necessary, or apply lubricants such as silicone spray (adhere to the specifications of the window system manufacturer).
8. Inspect / check seals (all the way round) and, if necessary, remove contaminations or replace.
9. Maintain the system (e.g. wipe with a wet cloth the opening element of the drive „chain" or „spindle" using non-acidic / lye containing agents and dry with a dry cloth and - if necessary lubricate with cleaning oil (e.g. Ballistol)).
10. Re-connect to power supply.
11. Open and close power-operated window using the hand-held control (function test).
12. Check safeguards for finger protection and re-adjust, if necessary).
13. Check that CE-label is attached to the power-operated element, e.g. NSHEV.
14. Check that warning notes and label on the drive are available.
15. If required, carry out a risk assessment according to Machinery Directive 2006/42/EC
    (for example if the machine has been modified).

24V 230V

Removal and disposal

To remove the drive, reverse the sequence used for fitting. Adjustment work is not required.

1. Before removing a drive, disconnect it from the power supply.
2. When removing a drive, the window must be secured against unintended opening.

Dispose of the parts in accordance with the applicable local or national legal regulations.

Target Group

These instructions are intended for qualified operators of Natural Smoke and Heat Exhaust Ventilation systems (NSHEV /SHEV) and Natural Ventilation of windows and familiar with the operating modes as well as with the residual risks of the system.
This device is not intended to be used by persons (including children) with limited physical, sensory or mental aptitude or lack of experience and/or knowledge unless they are supervised by a person responsible for their safety or have received instruction from this person as to how the device is used. Children should be supervised to ensure that they do no play with the device.
Cleaning and user servicing must not be carried out by children without being supervised.

Operation of the power-operated window
Switchs with OFF-default setting (i. e. key switch) shall be located within eyeshot of the operated window but in a safe distance from moving parts. If it is not a key switch, the switch must be installed at a height of at least 1.5 m and out of reach for unauthorized operation.
Drives that are provided with a manual actuator must be provided with a sign indicating how to use it. The sign shall be fixed permanently and clearly visible next to the manual actuator.

⚠ **Caution**

During the opening operation all persons should be kept clear off the window - directly below or right next to it (within the opening radius of the casement) since operating the manual switch may lead to uncontrolled movements of the driven part, for example due to mechanical failure or imbalance.

Do not allow children playing with fixed control devices and keep remote controllers out of children's reach.

Keep all other persons clear off the window if a switch with OFF-default setting is operated when the window closes. Keep all other persons clear off the window that closes when being operated by a smoke exhaust system.

⚠ **Warning**

Do not operate the window during repair or adjustment work.

Warranty and after-sales service

Basically our:

„General Terms and Conditions of Goods and Services by the Electrical Industry" issued by the Central Association of the Electrical Engineering and Electronics Industry (ZVEI) are applicable.

This warranty complies with legal requirements and applies to the country in which the drive was purchased.
The warranty covers material and manufacturing faults that occur during normal use of the products.

The warranty period for materials supplied is 12 months.

Warranty and liability claims with damages to property and persons will be excluded if they are due to one or several of the following causes:

- Improper use of the drive.
- Improper assembly, commissioning, operation, maintenance or repair of the drive.
- Operating the drive with defective, improperly installed or malfunctioning safety and protection devices.
- Failure to comply with the notes and assembly pre-requisites as specified in these instructions.
- Unauthorized constructional modifications to the drive or to accessories.
- Cases of catastrophe caused by foreign objects and Acts of God.
- Wear.

For possible warranty claims or required spare parts or accessories please contact your nearest branch office or the competent contact person at
Aumüller Aumatic GmbH.
Details can be found on our website
(www.aumueller-gmbh.de).

Liability

We reserve the right to change or adjust products at any time without prior notice. Illustrations are subject to change. Although we take every care to ensure accuracy, we cannot accept liability for the content of this document.

EINBAUERKLÄRUNG

für eine unvollständige Maschine
(nach Anhang II-1 B der EG-Richtlinie 2006/42/EG)

DECALRATION OF INCORPORATION

for a partly completed machinery
(in accordance with Annex II-part B of EG-Directive 2006142/EG)

Hersteller
Manufacturer

aumüller

Aumüller Aumatic GmbH
Gemeindewald 11
86672 Thierhaupten

Produktbezeichnung
Product designation

Kettenantrieb / Chain drive
KS2 S2 / KS2 S12 / KS2-TWIN S12 – 24VDC
KS2 S2 / KS2 S12 – 230VAC

Folgende grundlegende Sicherheits- und Gesundheitsschutzanforderungen nach Anhang 1 der o. a. EG-Richtlinie sind angewandt und eingehalten:
Follow basic compromise of safety and health protection requirements are applied and follow in accordance with Annex II-1 B of s. a. EG-Directive:

Nr./ no: 1.1.2; 1.1.3 / 1.2. 1 / 1.3.2-1.3.7 / 1.5.1; 1.5.4; 1.5.11 / 1.7.2; 1.7.3; 1.7.4, -4.1, -4.2, -4.3

Die speziellen technischen Unterlagen nach Anhang VII B wurden erstellt
The relevant technical documentation described in Annex VII, part B is prepared
Die Montageanleitung nach Anhang VI wurde erstellt
Assembly instructions described in Annex VI are prepared

Wir bestätigen die Konformität des oben bezeichneten Produktes mit folgend gelisteten EG- Richtlinien sowie Normen:
We confirm herewith the conformity of the above mentioned product with EG Directive and the standards listed below:

Richtlinie über elektromagnetische Verträglichkeit 2004/108/EG, Niederspannungsrichtlinie 2006/95/EG
Directive concerning Electromagnetic Compatibilty 2004/108/EC, low voltage Directive 2006/95/EC

Hiermit erklären wir, dass das Teil in der von uns gelieferten Ausführung und gemäß den beigefügten Betriebs- und Installationshinweisen zum Einbau in eine Maschine bestimmt ist, und ihr Betrieb solange untersagt ist, bis festgestellt ist, dass die Maschine, in die genanntes Teil eingebaut werden soll, den Bestimmungen der EG Maschinenrichtlinie 2006/42/EG entspricht.
We herewith declare that the part in the version delivered by us is intended to be installed in a machine in accordance with the enclosed operating and installation instructions, and that its operation is prohibited until the machine, into which the part is to be installed, is found to comply with the regulations of the EG Machine Directive 2006142/EG.

Wir werden der zuständigen Behörde ggf. die vorgenannten speziellen technischen Unterlagen in Form von Papier oder elektronisch übermitteln.
We shall transmit the aforsaid relevant technical documentation in hardcopy- / or electronic form to appropriate authority.

Die vorgenannten speziellen technischen Unterlagen können angefordert werden bei:
The aforesaid relevant technical documentation can be required by follow person:

Rechtsverbindliche Unterschrift:
Legally binding signature:

R. Meinzer

Thierhaupten, den 28.05.2014
Gemeindewald 11
86672 Thierhaupten

KONFORMITÄTSERKLÄRUNG
Declaration of Conformity

Hersteller
Manufacturer

aumüller

Aumüller Aumatic GmbH
Gemeindewald 11
86672 Thierhaupten

Produktbezeichnung
Product designation

Kettenantrieb / Chain drive
KS2 S2 / KS2 S12 / KS2-TWIN S12 – 24 VDC
KS2 S2 / KS2 S12 – 230 VAC

KONFORMITÄT
CONFORMITY

Wir bestätigen die Konformität des oben bezeichneten Produktes mit folgend gelisteten EG-Richtlinien sowie Normen:
We confirm herewith the conformity of the above mentioned product with EG Directive and the standards listed below:

Richtlinie über elektromagnetische Verträglichkeit 2004/108/EG
Niederspannungsrichtlinie 2006/95/EG

Directive concerning Electromagnetic Compatibility 2004/108/EC
Low voltage Directive 2006/95/EC

HARMONISIERTE NORMEN
HARMONIZED STANDARDS

DIN EN 61000-6-3 : 2011-09
DIN EN 61000-6-4 : 2011-09

SONSTIGE TECHNISCHE NORMEN UND SPECIFICATIONEN
FURTHER TECHNICAL STANDARDS AND SPECIFICATIONS

DIN EN 60335-2-103 : 2010-05
DIN EN 12101-2 : 2003 (24V Antriebe / Drives mit / with NRWG / NSHEV)

Rechtsverbindliche Unterschrift:
Legally binding signature:

R. Meinzer

Thierhaupten, den 28.05.2014
Gemeindewald 11
86672 Thierhaupten

CE

Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten.
The safety information in the product documentation supplied with the product has to be observed.

Zertifikat Certificate

VdS Schadenverhütung
bescheinigt die Anwendung eines

Qualitätsmanagementsystems

für

aumüller

Aumüller Aumatic GmbH · Gemeindewald 11 · D-86672 Thierhaupten

Zertifikats-Nr.:	Anzahl der Seiten:	Gültig von:	Gültig bis:
S 814040	1	10.10.2014	09.10.2017

Geltungsbereich des Zertifikates:

Entwicklung, Herstellung und Vertrieb von Produkten und Systemen für Rauch- und Wärmeabzug, natürliche Gebäudelüftung, automatische Tür- und Toranlagen sowie damit verbundene Wartungs-, Dienst- und Serviceleistungen

Zertifizierungsgrundlagen:

DIN EN ISO 9001
Qualitätsmanagementsysteme
Anforderungen
Ausgabe Dezember 2008
Qualitätsmanagementhandbuch des Zertifikatsinhabers

Köln, den 10.10.2014

Reinermann
Geschäftsführer

ppa. Urban
Leiter der Zertifizierungsstelle

DAkkS
Deutsche Akkreditierungsstelle
D-ZM-11149-01-01

Das Zertifikat umfasst ausschließlich das Qualitätsmanagementsystem in dem angegebenen Geltungsbereich. Die gegenwärtige Gültigkeit kann unter www.vds.de verifiziert werden.

Das Zertifikat gibt keine Auskunft über die Zertifizierung von Qualitätsmanagementsystemen oder die VdS-Anerkennungen von Errichterfirmen, Wach- und Sicherheitsunternehmen, Produkten, Verfahren, o. ä. Hierfür sind gesonderte Nachweise erforderlich.

Das Zertifikat darf nur unverändert und mit sämtlichen Anlagen vervielfältigt werden. Während der Gültigkeit des Zertifikates muss das Qualitätsmanagementsystem der Organisation stets die Forderungen der Zertifizierungsgrundlagen erfüllen. Dies wird durch VdS Schadenverhütung regelmäßig begutachtet.

Jegliche Werbung mit dem Zertifikat muss den Inhalt korrekt wiedergeben und darf nicht auf wettbewerbsrechtswidrige Art und Weise erfolgen.

VdS Schadenverhütung GmbH
Zertifizierungsstelle
Amsterdamer Str. 174
D-50735 Köln

Ein Unternehmen des Gesamtverbandes der Deutschen Versicherungswirtschaft e.V. (GDV)

Akkreditiert als Zertifizierungsstelle für Qualitätsmanagementsysteme von der DAkkS - Deutsche Akkreditierungsstelle GmbH

Translation of the original instructions (German)

Once the assembly and commissioning has been completed, the installer of a machine „power-operated window and door" shall hand these instructions over to the end-user. The end-user shall store these instructions in a safe place for further reference and use, if required.

Important note:
We are aware of our responsibility, which is why we present life-supporting and value-preserving products with greatest possible conscientiousness. Although we make every effort to ensure that the data and information are as correct and up-to-date as possible, we still cannot guarantee that they are free from mistakes and errors.
All information and data contained in this document are subject to alterations without prior notice. Distribution and reproduction of this document as well as the use and disclosure of its content is not authorized unless expressly approved. Offenders will be held liable for the payment of damages. All rights reserved in the case of a patent award or utility model registration.
Basically the General Terms and Conditions of Aumüller Automatic GmbH apply to all offers, supplies and services.

The publication of these assembly and commissioning instructions supersedes all previous editions.

AUMÜLLER AUMATIC GMBH
Gemeindewald 11
86672 Thierhaupten

Tel. +49 8271 8185-0
Fax +49 8271 8185-250
info@aumueller-gmbh.de

www.aumueller-gmbh.de

9000000201_V3.0_KW50/14