aumüller

Assembly and Commissioning Instructions

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



FV1 / FV3 / FV4 - LOCKING DRIVE FOR WINDOWS CE

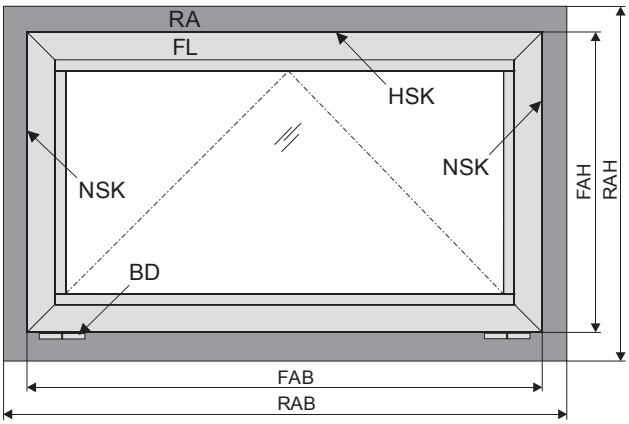
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Abbreviations

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
NRWG	NSHEV – natural smoke and heat exhaust ventilation
NSK	side closing edge
RA	frame
RAB	overall width of frame
RAH	overall height of frame
RWA	SHEV – smoke and heat exhaust ventilation
SL	snow load
→	opening direction



Target group

These instructions are intended for trained personnel and operators of systems for natural smoke ventilation (NRA / RWA) (natural smoke exhaust system / smoke and heat exhaust system) and natural ventilation via windows, who are knowledgeable of operating modes as well as the remaining risks of the system.

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.

⚠ Warning

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.

⚠ Warning

This device is not intended for use by persons (including children) with physical, sensory or mental limitations or lacking experience and / or knowledge, unless they are supervised by a person who is responsible for the safety or were instructed by him on the usage of this equipment. Children should be supervised to ensure that they are not playing with this device.
Cleaning and operator's maintenance may not be performed by children without supervision.

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01

INTENDED USE

Area of application / Scope of application

This drive is intended for the electromotive opening and closing of windows in facade and roof areas.

The main task of this product, in combination with a window and a suitable external control unit, **is to evacuate hot smoke and combustion gases in case of fire**, to safe human lives and protect material assets. Furthermore, with the electromotive operated window and a suitable external control unit, **the natural ventilation** of the building can be ensured.

NOTE

By attaching the drive to a movable element of the window a so-called "power-operated window" is created which, according to the Machinery Directive 2006 / 42 / EG, represents a machine.

Intended use according

The drive is intended for stationary installation and electrical connection at the window as part of a building.

The drive is in combination with an external Control Unit (e.g. from **AUMÜLLER**) released for its proper use at a power-operated window for the following use:

- Application for natural ventilation
  - with an installation height of the drive and the bottom side of sash of at least 2,5 m above the floor, **or**
  - with an opening width at the HSK of the driven part of < 200 mm by a simultaneous speed of < 15 mm/s at the HSK in closing direction.
- Application as NRWG (natural smoke and heat exhaust ventilator(s) for ventilation without dual purpose for ventilation in accordance with EN12101-2.

⚠ WARNING

Pay attention to possible hazards on tilting or rotating windows, whose secondary closing edges are located at less than 2,5 m installation height above the floor, under consideration of the Control Unit and usage!

We as manufacturers are well aware of our duties and responsibilities regarding the development, manufacturing and placing of safe window drives on the market and consistently implement them. Ultimately, however, we have no direct influence on the usage of our drives. Therefore, as a precaution, we point out the following:

- The **constructor or his agent** (architect, specialist planner) **are obligated to evaluate the hazards to persons**, outgoing from the usage, installation position, opening parameters and from the external Control Unit of the power operated window, already **in the planning phase and to establish necessary protective measures**.
- The **constructor / manufacturer** of the machine "power-operated window" **must implement** the planned **protective measures** at the installation site or, if not yet established, **determine them** by it´s own responsibility and detect or **minimize possible remaining risks**.

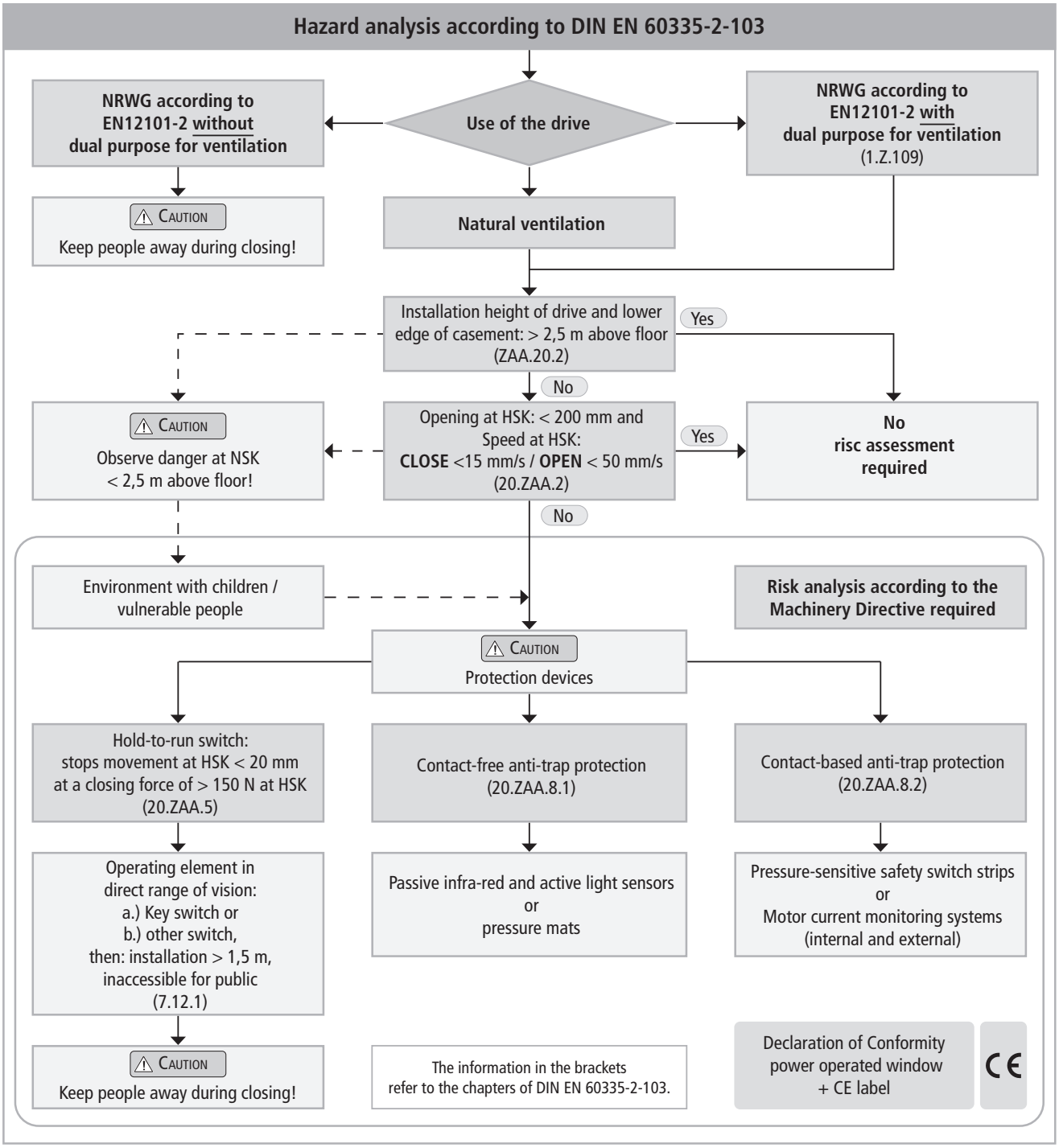
The need for a risk assessment at the installation site due to the reasonably foreseeable misuse.

A risk assessment in accordance with the Machinery Directive 2006 / 42 / EG for the usage of the power-operated window **for natural ventilation is absolutely necessary** under the following conditions:

- the installation height of the drive and lower edge of casement < 2,5 m above the floor
  and one of the following conditions:
- the opening width at the HSK > 200 mm, **or**
- the closing speed at the HSK is > 15 mm/s, **or**
- the opening speed at the HSK is > 50 mm/s, **or**
- the closing force at the HSK is > 150 N

The following flow chart can be applied, which also includes the protective measures in accordance with EN 60335-2-103/2016-05.

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Casement data

Facade:	bottom-hung window, top-hung-window, side-hung window.
Roof:	roof window / sky light.
Opening direction:	inward opening, outward opening.
Profile material:	aluminum, steel, plastic or wood.

When inspecting the drives for conformity with on-site requirements the following items must be observed:

- total weight of casement (glass + frame),
- casement size (FAB x FAH),
- driving force and stroke,
- mounting site at the window frame and casement frame.

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01

SAFETY INSTRUCTIONS

⚠ WARNING

It is important to follow these instructions for the safety of persons. These instructions shall be kept in a safe place for the entire service life of the products.

Risk of crushing and entrapment!
Window can close automatically!



The integrated load cut-off stops the drive during closing and opening when the drive is overloaded.
The compressive force is absolutely sufficient to crush fingers in case of carelessness.

Area of application

The drive shall only be used according to its intended use. For additional applications consult the manufacturer or his authorized dealer.

⚠ WARNING

Do not misuse the drive for other lifting operations!
Do not allow children to play with this drive or its electric controls, including the remote control!

Always check whether the system complies with current regulations. Special attention must be paid to the opening width, the opening area, the opening time and the opening speed of the window, the temperature range of the drives / external devices and cables as well as the cross section of the connecting cables as function of the cable length and power consumption.



All devices must be permanently protected from dirt and moisture, if the drive is not explicitly suitable for use in wet areas (see technical data).

Installation

These instructions address expert and safety-conscious electricians and / or qualified personnel knowledgeable in electrical and mechanical drive installation.

NOTE

The safe operation, avoidance of injury to persons and damage to property, as well as risks, is only guaranteed by proper installation and setting according to these installation instructions.

All specifications for installation must be checked independently and, if necessary, adjusted at the installation site. The connection assignment, the electrical supply data (see product lable) and performance limits (see technical data) as well as the mounting and installation instructions of the drive must be strictly observed and adhered to!



Never connect 24 V DC drives to 230 V AC mains voltage!
Danger to life!

Do not reach into the window rabbet or the operating element (chain or spindle) during installation and operation! Ensure that, based on the installation position and the opening movement of the casement, persons cannot be trapped between the driven part of the window and surrounding fixed components (e.g. wall).

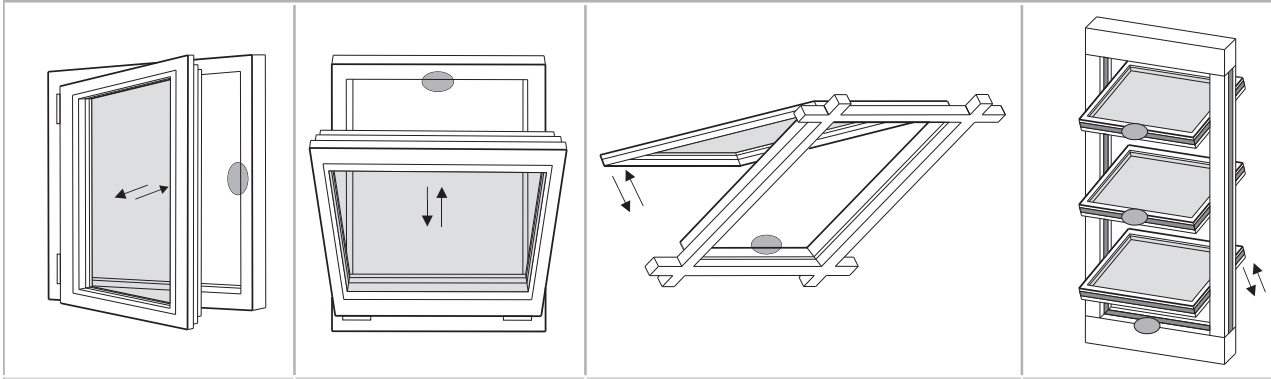
Mounting material

The required mounting material must to fit with the drive and occurring load and, if necessary, supplemented.

NOTE

Before installing the drive, check whether the casement is in good mechanical condition, the weight in balance and whether it opens and closes easily!

Danger spots by crush and shear points



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

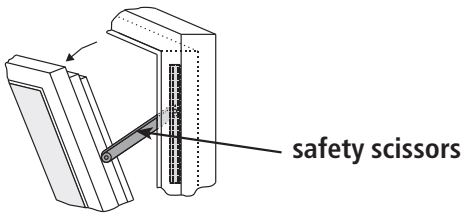
Danger spots: crush and shear points according to DIN EN 60335-2-103

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Crush and shear points
To avoid injuries, **crushing and shear points** between casement and frame must be secured **against entrapment up to an installation height of 2,5 meters above the floor** with appropriate measures. This can be achieved e.g. by using contact-based or contactless protective devices against entrapment, which stop the motion through contact or through interruption by a person. At a force higher than 150 N at the main closing edge the motion must stop within 20 mm. A warning symbol at the opening element must indicate this clearly.

Unintentional or independent opening or falling
Casements are to be hinged or secured such way that in case one of the mounting elements fails it will not crash / slam down or move in an uncontrolled manner by e.g. using double suspensions, safety scissors, casement stays.
Tilting windows shall be equipped with safety scissors or similar devices to avoid damages and risks of injury for persons through improper installation and operation. The safety scissors must be adjusted to the opening stroke of the drive (see technical data) to avoid blocking. The opening width of the safety scissors must be bigger than the drive stroke.

⚠ Warning — The movable casement must be secured against unintentional or independent opening as well as falling down.



Routing cables and electrical connection
Routing or installing of electrical cables and connections may be performed only by specialist companies. Never operate drives, control units, operating elements and sensors at operating voltages and connections contrary to the specifications of the manufacturer.
All relevant national instructions shall be observed for the installation.

All-pole disconnecting devices shall be installed in the permanent electrical installation or external Control Unit for the drive.
The mains supply lines 230 V / 400 V AC shall be protected separately!

24V DC drives may only be connected to power supply sources that comply with SELV specifications.

Note — In the case of tandem / multiple operation of drives connected in series, the cross-section of the connection cable must be checked autonomously, depending on the total current consumption of the drive system.

⚠ Warning — Damaged mains supply lines of drives with plug connectors may only be replaced by the manufacturer or qualified service / maintenance personnel!
Power cables which are fixed to the drive casing cannot be replaced. If the cable is damaged the device must be scrapped!

The types of cable, cable lengths and cross-sections shall be selected in accordance with the manufacturer's technical data. If necessary, the cable types shall be coordinated with the competent local authorities and energy supply companies. Low-voltage lines (24 V DC) shall be routed separate from the high-voltage lines. Flexible cables may not be flush-mounted. Freely suspended cables shall be equipped with strain reliefs.

Cables must be laid such way that they cannot be sheared off, twisted or bent during operation. Drive cables laid inside window profiles must be protected by insulating tubes with a sufficient temperature resistance. Through holes shall be equipped with cable sleeves!

Clamping points shall be checked for tightness of threaded connections and cable ends. Access to junction boxes, clamping points and external drive control boxes shall be ensured for maintenance work.

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Commissioning, operation and maintenance
After the installation and after each modification in the set up all functions shall be checked with a trial run. It shall be ensured that drive and casement are set correctly and that security systems, if available, are functioning properly. **After the installation of the system is completed the end-user shall be instructed in all important operating steps.** If necessary, he must be advised of all remaining risks / dangers.
The end-user shall be specifically instructed that no additional forces, except pushing and pulling forces in the opening and closing direction of the casement, may be applied to the spindle, chain or lever of the drive.

NOTE Post warning signs!

During the proper assembly of drives with mounting elements at a window, and the connection to an external control unit, the interfaces resulting from mechanical and electrical performance characteristics of single elements shall be observed.

⚠ CAUTION Other persons must be kept away from the casement when a hold-to-run switch (pushbutton) is operated or when a window, which has been opened by a smoke and heat exhaust system, is closing!

⚠ CAUTION The operating element of hold-to-run switches must be installed within direct view from the window, but apart from moving elements. If the switch is not a key-operated switch it must be installed at a minimum height of 1,5 m and inaccessible to the public!

⚠ CAUTION Do not allow children to play with permanently mounted control devices and keep remote controls out of reach for children!


During cleaning, maintenance work and while exchanging parts the drive must be completely disconnected from the power supply and secured against unintentional reactivation.

⚠ WARNING Do not actuate the drive or the casement when repair or re-setting works are performed!

Replacement parts, fasteners and controls
The drive shall only be operated with control devices from the same manufacturer. There is no liability, warranty or customer service if third-party parts are used. Exclusively original spare parts of the manufacturer shall be used for mounting elements or expansions.

Ambient conditions
The product may not be subjected to impacts or falls, or to vibrations, moisture, aggressive vapors or other harmful environments, unless the manufacturer released it for one or more of these environmental conditions.

- **Operation:**
  Ambient temperature: -5 °C … +60°C
  Relative humidity: < 90% less 20°C;
  < 50% less 40°C;
  no formation of condensation

NOTE Observe temperature range during installation!

NOTE We recommend the use of wind and rain sensors in order to avoid weather-related damages to drives, windows and buildings thru open window sashes.

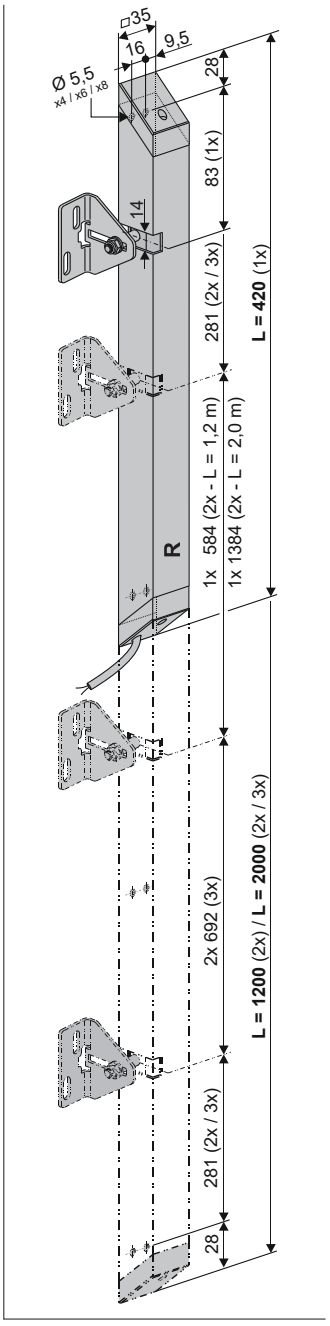
- **Transport / Storage:**
  Storage temperature: -5°C … +40°C
  Relative humidity: < 60%

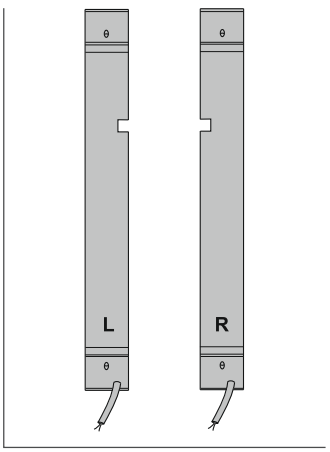
Accident prevention regulations and workmen's compensation insurance guidelines
For work on or in a building or building part the provisions and instructions of the respective accident prevention regulations (local workmen's compensation insurance guidelines) shall be observed and adhered to.

Declaration of Conformity and of Incorporation
The drive is manufactured and inspected in accordance with European guidelines. The respective Declaration of Conformity and of Incorporation is on hand.
In case that the use of the drive differs from the intended use, a risk evaluation for the power operated window shall be performed and a Declaration of Conformity according Machinery Directive 2006 / 42 / EG issued.

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DATA SHEET FV1 / FV3 / FV4





- Application: natural ventilation, SHEV, ferralux®-NSHEV
- Surface mounting on the window frame/casement profiles of the main/side closing edge (HSK / NSK) of in-/outward opening windows. Locking bracket mounted on the casement.
- Required mounting space 35 mm
- Usable without locking bar

Options

- Mounting plate for installation on the window frame profile (RM) of outward opening windows or on the casement profile (FM) of inward opening windows
- Slim locking bracket 18 mm for small mounting space on the window frame profiles

FV1

- Without internal cut-off switch and sequence control, for use in RWA hardware systems with USKM module

FV3

- With internal load dependent cut-off switch and sequence control for drives PL6 S1 / PL10 S1 (I_A= 0,8 A)

FV4

- M-COM suitable internal load dependent cut-off switch and sequence control for drives S3 /S12
- Star wiring
- Current of the drives does not run over FV4
- Sequence control via communication wire

TECHNICAL DATA

U_N	Rated voltage	24V DC (19 V ... 28 V)
I_N	Rated current	0,6 A
I_0	Quiescent current	~ 30 mA
P_N	Rated power	20 W
I_D	Current of connected drives	FV1: USKM FV3: 0,8 A (PL 6/10 S1) FV4: 3 A, S3 / S12 non relevant
DC	Duty cycle	5 cycles (ED 30 % - ON: 3 min. / OFF: 7 min.)
	Protection rating	IP 32
	Ambient temperature range	-5 °C ... + 60°C
F	Pushing / Pulling force max.	~ 600 N
t	Runtime	~ 5,0 s
	Connecting cable	FV1: non-halogen, grey 2 x 0,75 mm², ~ 3 m FV3: non-halogen, grey 2 x 0,75 mm², ~ 3 m FV4: non-halogen, grey 3 x 0,50 mm², ~ 3 m
	Housing	aluminium 35 x 35 mm
L	Length	see order data
	Versions	FV1: 1x R/L, 2x R, 3x R FV3: 1x R/L, 2x R, 3x R FV4: 1x R/L, 2x R
	Version name	1x = 1 locking point 2x = 2 locking points 3x = 3 locking points R = right hand version L = left hand version
	Sound pressure level	≤ 70 dB (A)

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02

ORDER DATA					
Type	L [mm]	Version	Finish	PU / pcs.	Part.-No.
Single right hand	420	FV1 R (1x)	E6/C-0	1	515103
		FV3 R (1x)		1	515102
		FV4 R (1x)		1	515129
Single left hand	420	FV1 L (1x)	E6/C-0	1	515106
		FV3 L (1x)		1	515105
		FV4 L (1x)		1	515130
Double right hand	1200	FV1 R (2x)	E6/C-0	1	515111
		FV3 R (2x)		1	515110
		FV4 R (2x)		1	515131
Double right hand	2000	FV1 R (2x)	E6/C-0	1	515113
		FV3 R (2x)		1	515112
		FV4 R (2x)		1	515132
Triple right hand	2000	FV1 R (3x)	E6/C-0	1	515116
		FV3 R (3x)		1	515114
		FV4 R (3x)		1	515136

Special model	PU / pcs.	Part.-No.
Drive housing painted/powder coated in other RAL colours		
Lump sum for coating		516030
Specify at order stage:	1 – 20	516004
	21 – 50	516004
	51 – 100	516004
	up 101	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
5 m – non-halogen, grey – 3 x 0,50 mm²		501034
10 m – non-halogen, grey – 3 x 0,50 mm²		501036
Microprocessor programming S12		
Programming drives 24V / 230V S12		524180

Optional accessories	PU / pcs.	Part.-No.
M-COM Configuration module for synchronised multi-drive systems (for FV4)	1	524177

EXPLANATIONS ON THE PRODUCT LABEL

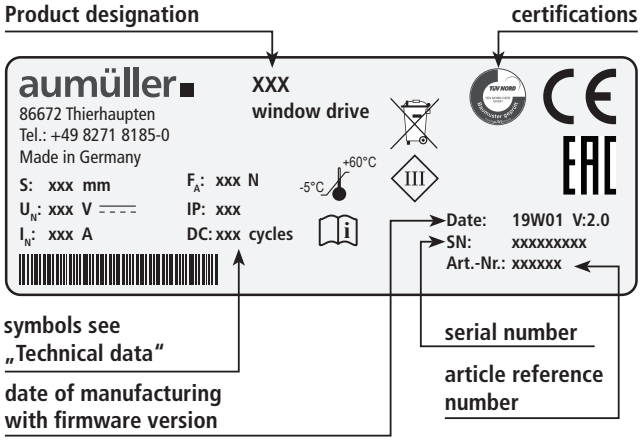
The product label informs about:

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

Exemplary representation



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Determination of locking points

The number of locking points depends on:

- object-specific requirements
- processing guidelines and authorized ranges of application of the manufacturer
- EN 12102-2 NRWG (depending of profile group and wind load classification **WL**)
- EN 12207 Air permeability
- EN 12208 Driving rain tightness
- EN 12210 Resistance to wind load
- EN 1627 Burglar resistance
- EN 14351-1 Window or door standard
- DIN 1991-1-3 Snow loads
- DIN 1991-1-4 Wind loads

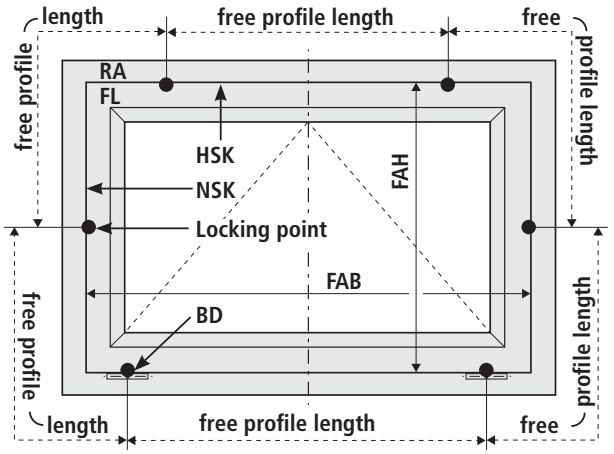
Only the worst case with secured values and application ranges must serve as a basis.

Locking points are centers / axes of the following components: casement hinges / stays (**BD**), sealing points of the locking system, application points of directly actuating drives (force transmission axes at 90° to the casement profile, with closed window).

Drives used in SHEV mounting devices such as: RWA 1000, RWA 1050, RWA 1100 are not included in the locking points.

Free profile lengths are effective distances between two locking points. Corner and edge distances shall be calculated as straight lines.

Free profile lengths between two locking points



Static wind slipstream loads on the SHEV - according to EN 12101-2.	Free profile length for Ix⁴-values of the window casement profiles			
	20-34 cm⁴	35-50 cm⁴	51-55 cm⁴	56-99 cm⁴
WL 1000	1300 mm	1500 mm	1700 mm	1900 mm
WL 1500	1200 mm	1400 mm	1600 mm	1800 mm
WL 2000	1100 mm	1275 mm	1450 mm	1650 mm
WL 2500	900 mm	1025 mm	1150 mm	1275 mm
WL 3000	800 mm	900 mm	1000 mm	1100 mm

Values apply only for Aumüller ferralux NRWG.

Tools required

- marker,
- grains,
- hammer,
- knife,
- screwdriver (cross, Torx),
- hexagonal wrench,
- torque wrench,
- power drill,
- threadlock adhesive,
- possibly a tool for blind rivet nuts.

Note

The number of locking points or the free profile length between two locking points are described into the respective system documents of the window profile. This information must be adhered.
The requirements for the tightness of the windows according to EN 14359-1 must be observed!

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INSTALLATION STEP 1: INSPECTION BEFORE THE INSTALLATION

⚠ WARNING Important instructions for a safe installation. Observe all instructions, wrong installation may result in serious injury!

Storage of drives at the construction site

Protective measures against damages, dust, moisture or contamination shall be taken. Store drives intermediately only in dry and well ventilated rooms.

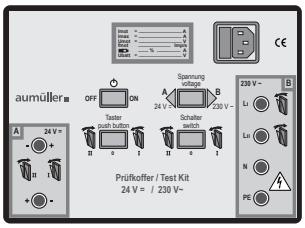
Inspection of drives before installation

Check drives and window before installation for good mechanical condition and completeness. The chains / spindles of the drives must be extendable or retractable easily. The casement must run smoothly and the weight must be in balance.

NOTE We recommend the use of our test kit for the inspection of drives with the rated voltage 24V= / 230V~ (see table below). Damaged products may not be operated under any circumstance.

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 ... + 40 °C
Plastic housing:	250 x 220 x 210 mm
Weight:	approx. 3,6 kg
Feature / equipment:	Control elements: 2 switches + 1 button





The test procedure of drives may only be performed on a non-slip and secured mat or a test fixture. During the test run the test element must not be interfered with. The test my only be conducted by or under the supervision of expert personnel.

For testing chain drives the chain must be extended and retracted at an angle of approx. 90°. The spindle tubes of spindle drives in round housing tubes must be secured against independent spinning before starting the test to avoid deviations in the integrated position encoder.

Inspection of the intended use

The planned use of the drive must be checked for compliance with its intended use. If used otherwise the liability and warranty claim expires.

Predictable misuse

It is imperative that foreseeable misuse of drives is avoided! Here are a few examples:

- do not connect 24 V DC drives to a 230 V AC mains voltage,
- observe synchronous run and sequence control by drives with multiple interconnection (if existing),
- use drives only indoors,
- avoid additional force influences, e.g. transverse forces.

Testing mechanical requirements

Prior to the start of the installation check whether :

- the support surface and the profile static for the load transmission is sufficient,
- a support construction for the secure fastening of the drives is required,
- cold bridges (thermal separation) are avoidable at action points,
- there is sufficient space for the swivel movement of the drive.

If not, counter measures must be taken!



The support surface of the frame brackets or casement brackets must rest completely on the window or frame profile. There must be no tilting of the fastening elements during extension and retraction of the drives. A safe and solid fastening must be ensured at the window profile.

⚠ CAUTION It is imperative that the sufficiently mechanical stiffness of the fastener type as well as of the swivel range of the drive is observed.
If this is not guaranteed another type of fastening or another type of drive must be selected.

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Installation step 2: Installation prerequisite and Installation preparation

The following conditions must be fulfilled for the installation of the drives so they can be properly assembled with other parts and constructed to a complete machine at the window without impairing the safety and health of persons:

1. The design of the drive must fulfill the requirements.
2. The fastening accessories (casement brackets or frame brackets) must fit the window profile; the profile-dependent hole lay-out must be complied with.
3. The space required for the installation of the drive on the frame and casement profile must be sufficient.
4. The window must be in perfect mechanical condition before the installation. It should open and close easily.
5. The fastening material for the installation of the drive must fit the window material (see table).

Wood windows	Wood screws: i.e. DIN 96, DIN 7996, DIN 571 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 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 round head with cross, external hex head, Torx	Recommendation: if possible, screw through two cavity webs

Check window data on site

- Measure FAB and FAH.
- Check / calculate weight of casement.
  If unknown, it can be determined approximately with the following formula:

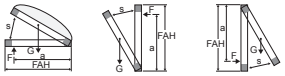
$$G\ (\text{Casement weight})\ [\text{kg}] = \underset{[\text{m}]}{\textbf{FAB}} * \underset{[\text{m}]}{\textbf{FAH}} * \underset{[\text{mm}]}{\textbf{Glass thickness}} * \underset{\text{glass-density}}{2{,}5} * \underset{\text{frame share}}{1{,}1}$$

- Check / calculate the required drive force and compare with drive data . If unknown, it can be determined approximately with the following formula:

$$\textbf{F}\ [\text{N}] = \frac{5{,}4 * \textbf{G}\ [\text{kg}] * \textbf{s}\ [\text{m}]}{\textbf{a}\ [\text{m}]}\quad \textbf{Facade}$$

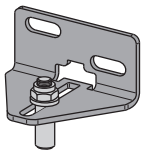
$$\textbf{F}\ [\text{N}] = \frac{5{,}4 * \textbf{G}\ [\text{kg}] * \textbf{FAH}\ [\text{m}]}{\textbf{a}\ [\text{m}]}\quad \textbf{Roof}$$

a = Distance of action point to hinges
F = Drive force
s = Stroke



Scope of delivery:

Prior to assembly, check that delivered products are complete.

Scope of delivery for locking drive	
 Information	Assembly and Commissioning Instructions
	Locking angle is not mounted
	Warning sign sticker „Risk of entrapment“ (1x)

Installation step 3: Assembly Opening-Drive

- Mount Opening-Drive (see separate „Assembly and Commissioning Instructions“ for each window-drive).
- Make the connection for the control voltage to the Opening-Drive (see chapter: „Electric connection“).

FV1

DIP switches in the **USKM** set in accordance with the electronic cut-off switch.

- Without internal cut-off switch and sequence control, for use in RWA hardware systems with USKM module.
- For drives with software **S1**.

FV3

The Opening-Drives **must not have** an integrated disconnection and / or an electronic overload disconnection.

- With internal load dependent cut-off switch and sequence control for drives PL6 S1 / PL10 S1 (I_A= 0,8 A).
- For drives with software **S1**.

FV4

The Opening-Drives **must have** an integrated disconnection and / or an electronic overload disconnection.

- M-COM suitable internal load dependent cut-off switch and sequence control. For drives with internal load dependent cut-off switch **S3** / **S12**.
- Star wiring. Sequence control via communication wire.
  Current of the drives does not run over FV4.

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Installation step 4a: Test run before assembly Assembly with M-COM

FV4

The Opening-Drive and the not mounted locking drive **FV4** must be tested **separately**.

Test run: Opening-Drive

- **Switch on** the **control voltage** at the Opening-Drive.
- Move Opening-Drive in **CLOSE** direction.
- Move Opening-Drive in **OPEN** direction and ensure the ease of movement of casement.

- Unhinge the Opening-Drive.
- **Switch off** the **control voltage** from the opening drive.

Test run: locking drive

- Make the connection for the control voltage to the not mounted locking drive **FV4** (see chapter: „Electric connection - Installation step 12").



During **start-up** of locking drives **FV4** the 24 V-control voltage may be switched on only:

- with opened casement
- unhinged Opening-Drive

- **Switch on** the **control voltage** at locking drive **FV4** - in **CLOSE** direction.
- If necessary, correct the locking stroke - with the **DIP** switches (see chapter: „Connecting cable and DIP switch").
- Move locking drive **FV4** in **OPEN** direction.
- **Switch off** the **control voltage** from the locking drive **FV4**.
- Assembly the locking drives **FV4** - according to installation step 5 - 10.

Installation step 4b: Test run before - Assembly of a preprogrammed set

FV3

The Opening-Drive and the not mounted locking drive **FV3** must be tested **together**.

Note Drives from the factory preprogrammed sets do not work individually!

- Unhinge the Opening-Drive and open the casement manually.

Test run: locking drive

- Make the connection for the control voltage to the not mounted locking drive **FV3** (see chapter: „Electric connection - Installation step 12").



During **start-up** of locking drives **FV3** the 24 V-control voltage may be switched on only:

- with opened casement
- unhinged Opening-Drive

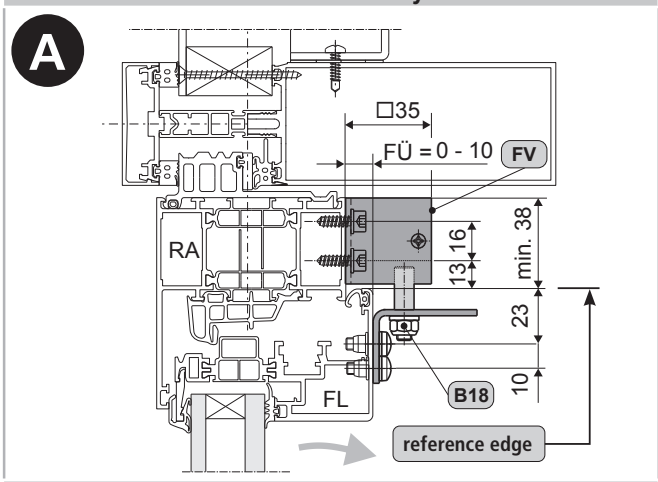
- **Switch on** the **control voltage** at locking drive **FV3** and at the Opening-Drive - in **CLOSE** direction. First the Opening-Drive moves in **CLOSE** direction, then the locking drive **FV3** begins to start.
- If necessary, correct the locking stroke - with the **DIP** switches (see chapter: „Connecting cable and DIP switch").
- Move locking drive **FV3** and the Opening-Drive in **OPEN** direction.
- **Switch off** the **control voltage** from the locking drive **FV3** and form the Opening-Drive.
- Assembly the locking drives **FV3** - according to installation step 5 - 10.

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INSTALLATION STEP 5: HOLE LAYOUTS FOR FV

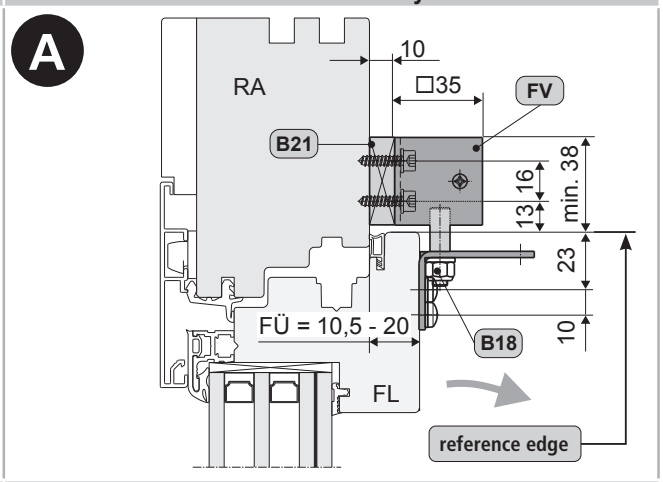
Application examples

Bottom-hung inward opening Frame assembly



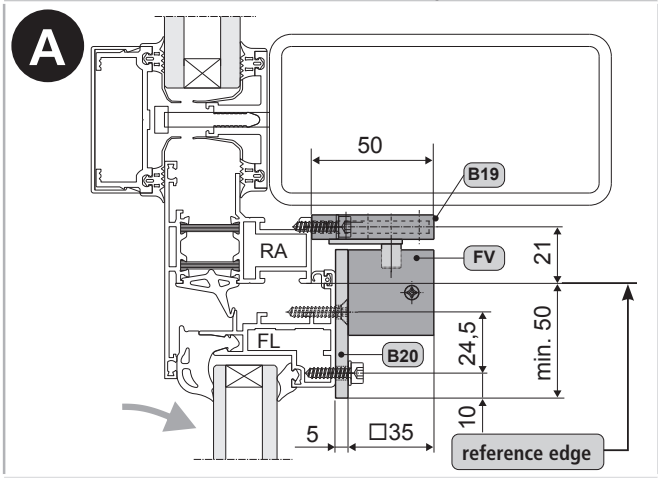
View on aluminium window

Bottom-hung inward opening Frame assembly



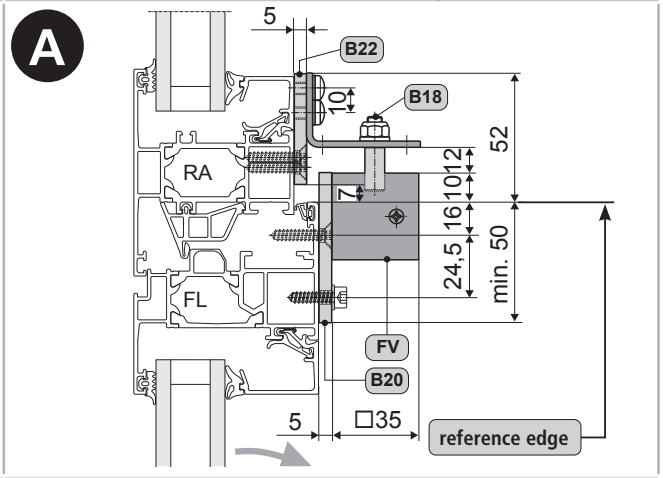
View on wood window

Bottom-hung inward opening Casement assembly



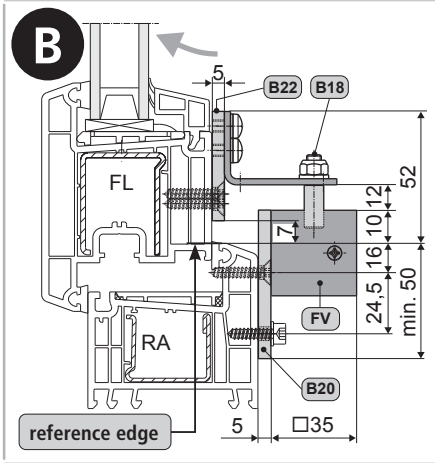
View on aluminium window

Bottom-hung inward opening Casement assembly



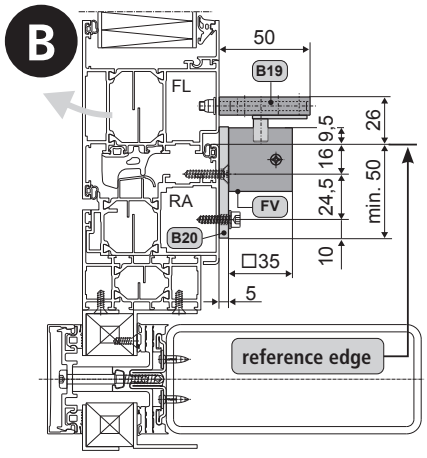
View on aluminium window

Top-hung outward opening Frame assembly



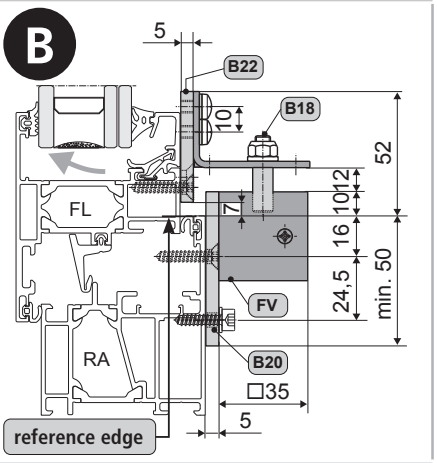
View on PVC window

Top-hung outward opening Frame assembly



View on aluminium window

Top-hung outward opening Frame assembly



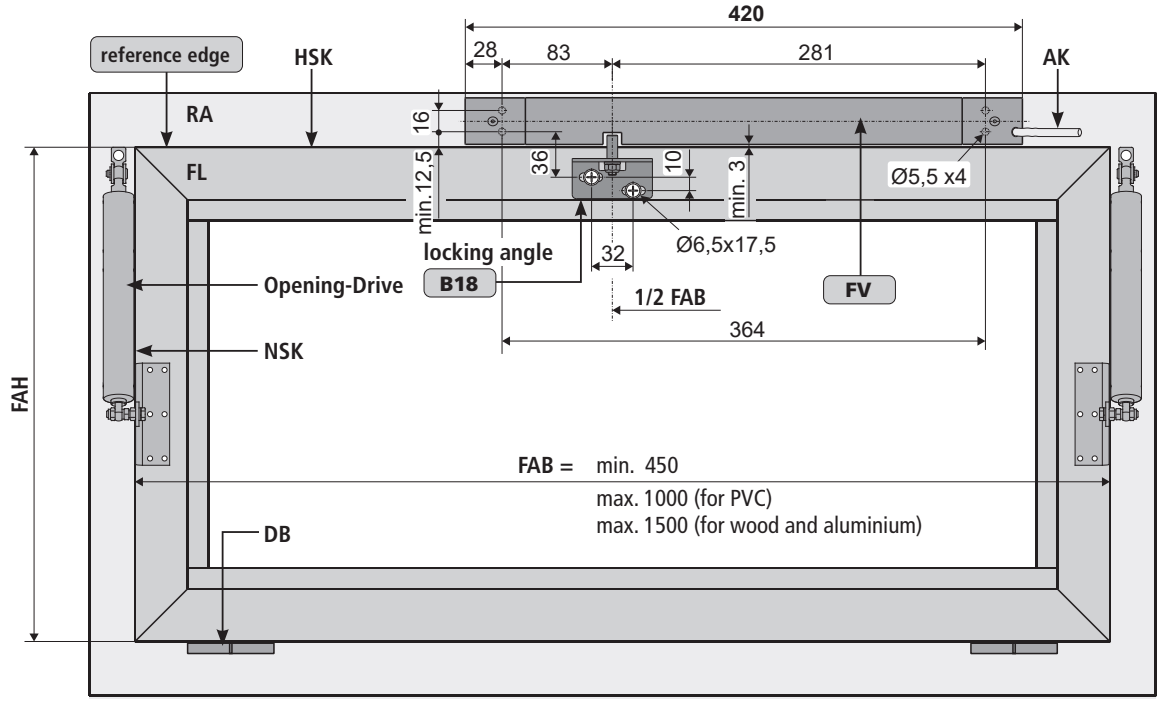
View on aluminium window

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Frame assembly - inward opening windows - hole layout FV1 / FV3 / FV4 - single, right-hand, length = 420 mm

A See: INSTALLATION STEP 8A

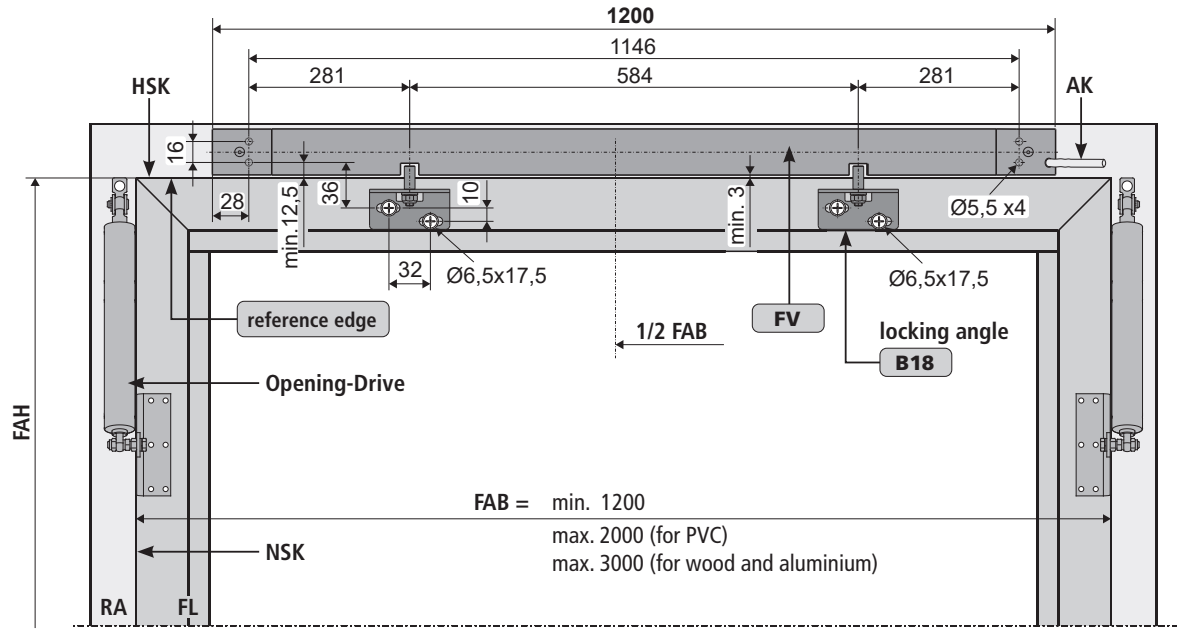
Window versions	Bottom-hung	- inward opening	Horizontal + vertical pivot
	Top-hung	- inward opening	
	Side-hung	- inward opening	



Frame assembly - inward opening windows - hole layout FV1 / FV3 / FV4 - double, length = 1200 mm

A See: INSTALLATION STEP 8A

Window versions	Bottom-hung	- inward opening	Horizontal + vertical pivot
	Top-hung	- inward opening	
	Side-hung	- inward opening	

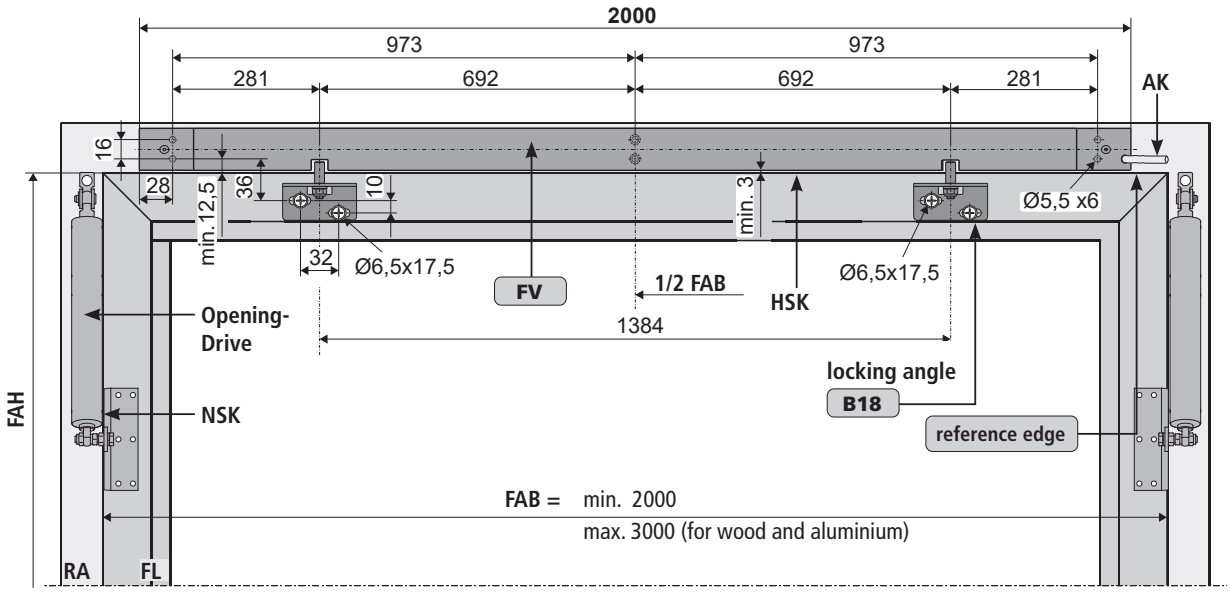


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Frame assembly - inward opening windows - hole layout FV1 / FV3 / FV4 - double, length = 2000 mm

A See: INSTALLATION STEP 8A

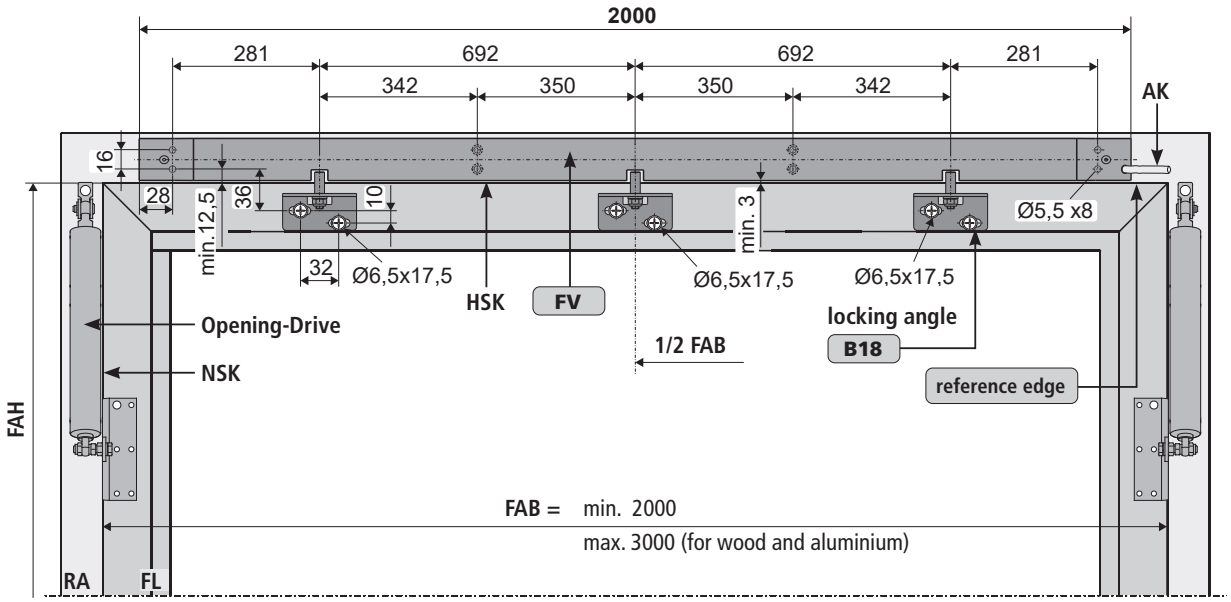
Window versions	Bottom-hung - inward opening Top-hung - inward opening Side-hung - inward opening	Horizontal + vertical pivot



Frame assembly - inward opening windows - hole layout FV1 / FV3 - triple, length = 2000 mm

A See: INSTALLATION STEP 8A

Window versions	Bottom-hung - inward opening Top-hung - inward opening Side-hung - inward opening	Horizontal + vertical pivot

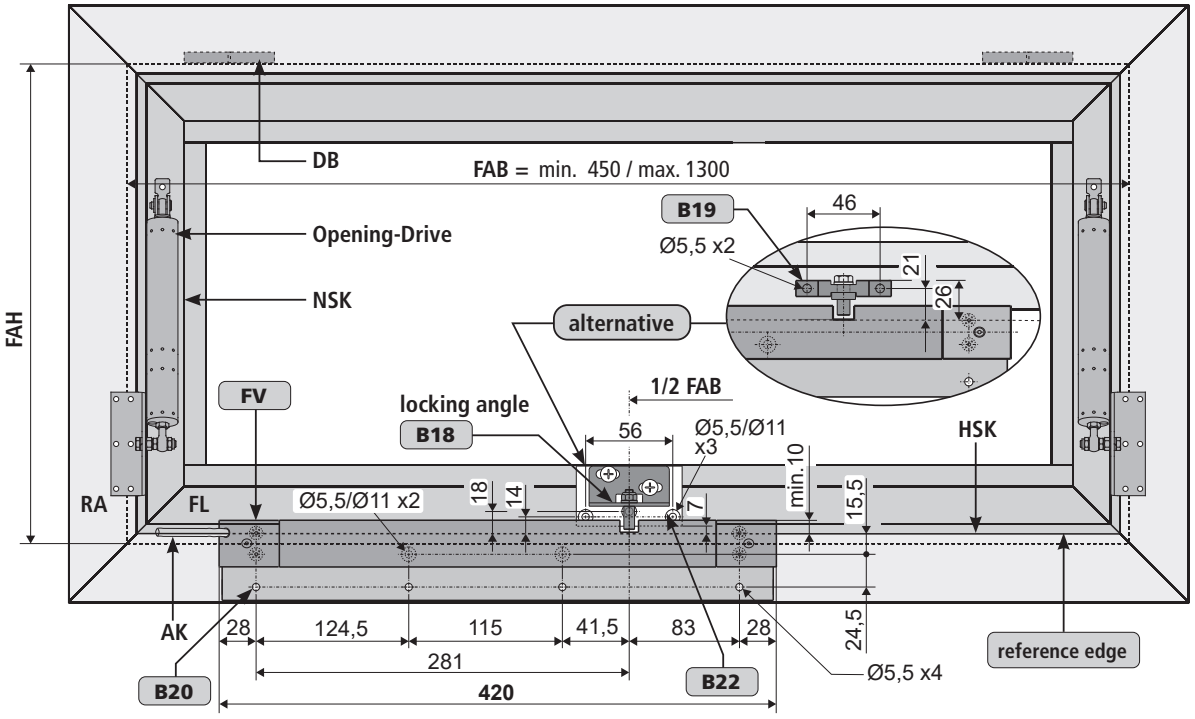


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Frame assembly - outward opening windows - hole layout FV1 / FV3 / FV4 - single, right-hand, length = 420 mm

B See: INSTALLATION STEP 8B

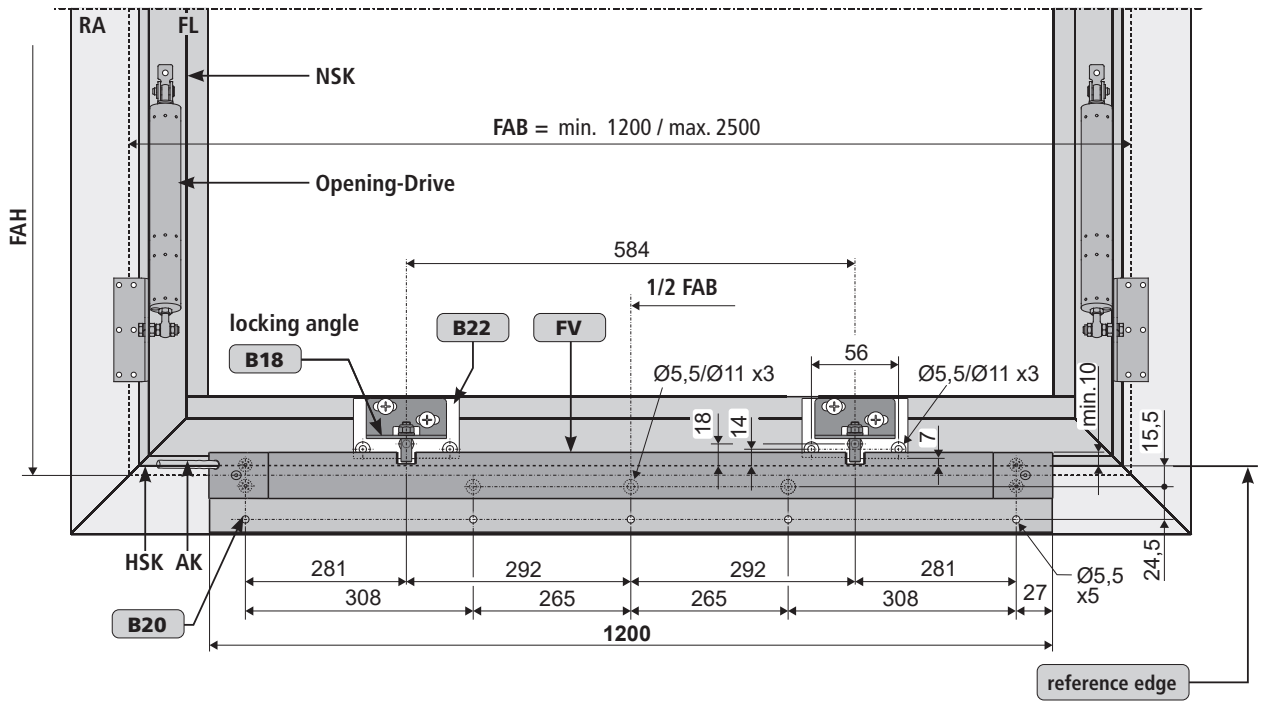
Window versions	Bottom-hung - outward opening Top-hung - outward opening Side-hung - outward opening	Horizontal + vertical pivot



Frame assembly - outward opening windows - hole layout FV1 / FV3 / FV4 - double, length = 1200 mm

B See: INSTALLATION STEP 8B

Window versions	Bottom-hung - outward opening Top-hung - outward opening Side-hung - outward opening	Horizontal + vertical pivot

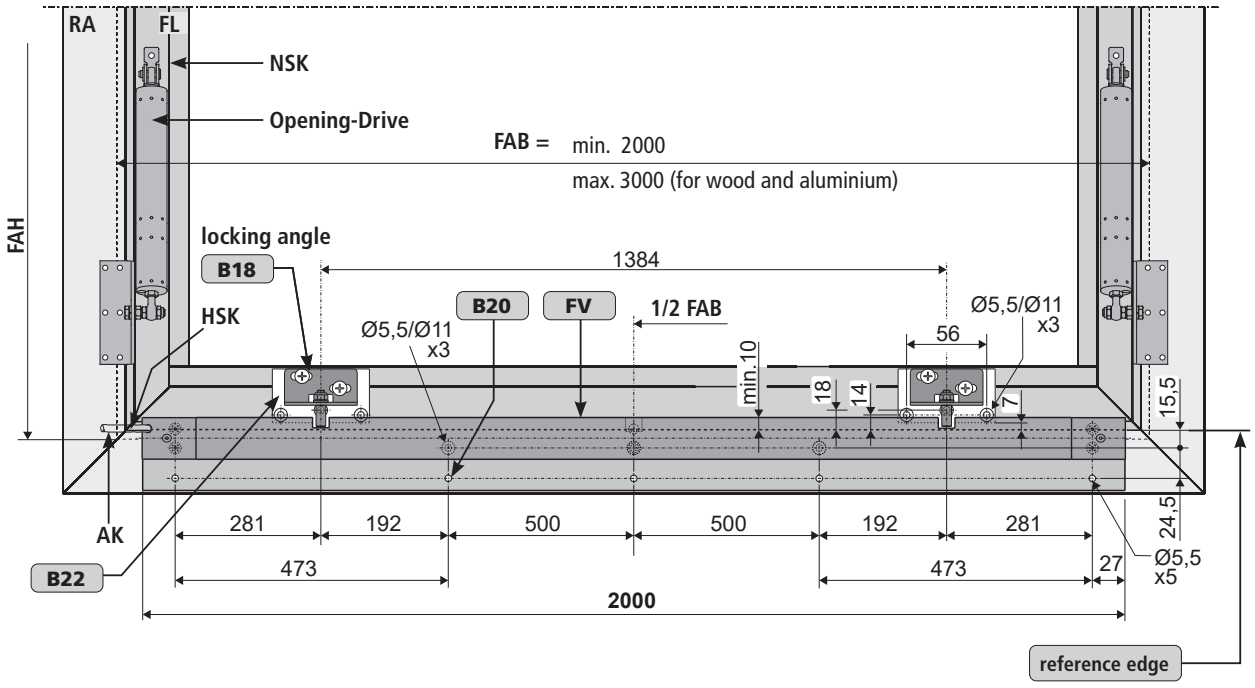


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Frame assembly - outward opening windows - hole layout FV1 / FV3 / FV4 - double, length = 2000 mm

B See: INSTALLATION STEP 8B

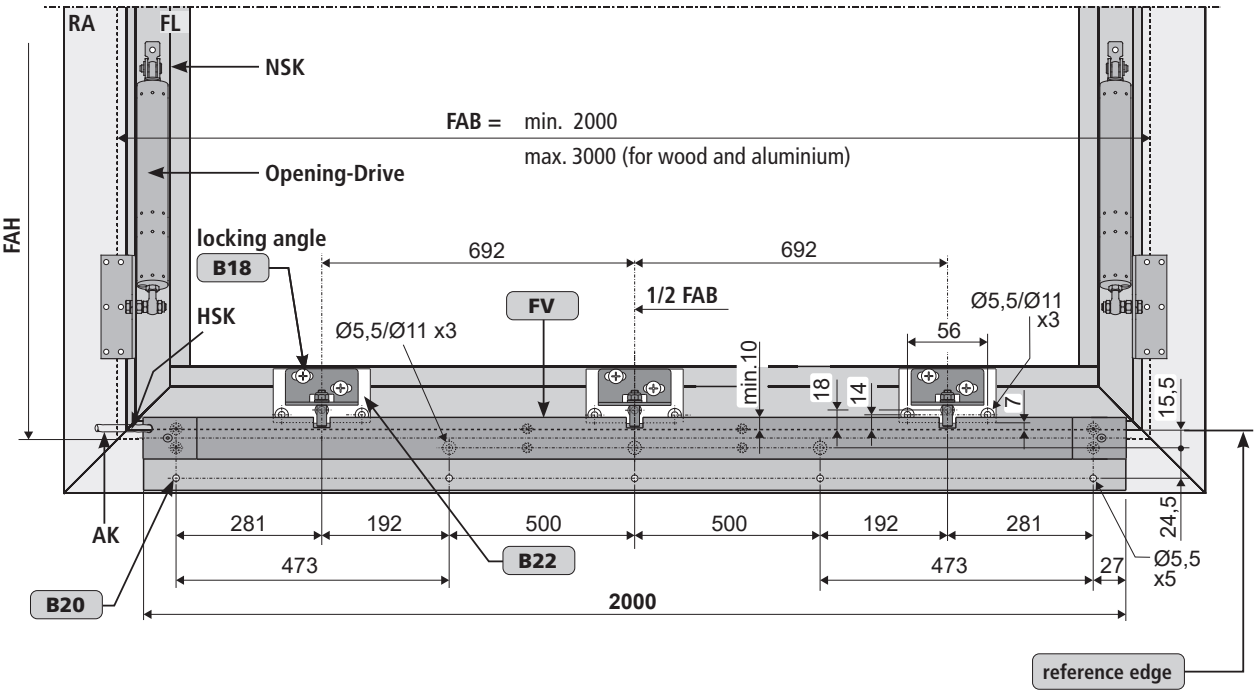
Window versions	Bottom-hung	- outward opening	Horizontal + vertical pivot
	Top-hung	- outward opening	
	Side-hung	- outward opening	



Frame assembly - outward opening windows - hole layout FV1 / FV3 - triple, length = 2000 mm

B See: INSTALLATION STEP 8B

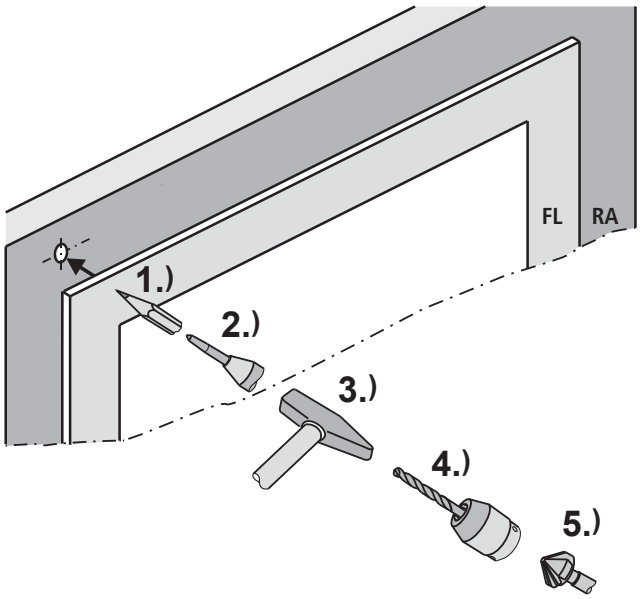
Window versions	Bottom-hung	- outward opening	Horizontal + vertical pivot
	Top-hung	- outward opening	
	Side-hung	- outward opening	



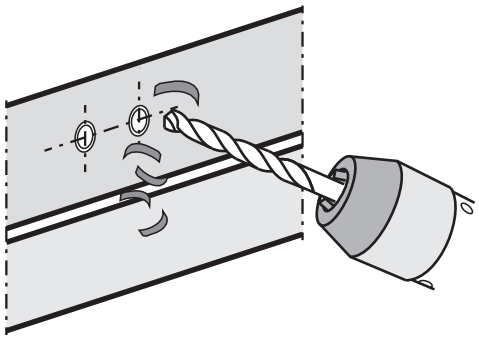
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INSTALLATION STEP 6: DRILL HOLES ACCORDING TO MOUNTING VARIANTS

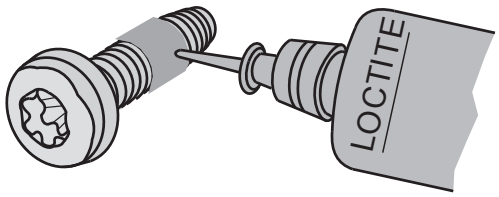
- Determine fastenings.
- Produce drill holes with appropriate cross-section. For the mounting dimensions please refer to the above-mentioned hole layout drawings (see chapter „INSTALLATION STEPE 5" or project-specific documents and drawings).



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

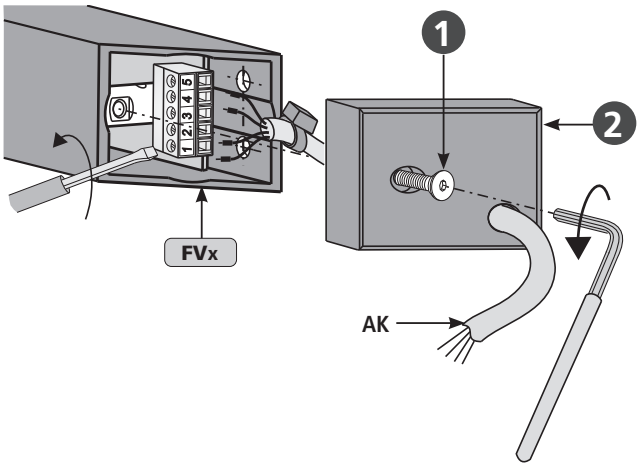


- Secure fasteners against loosening; e.g. by applying removable thread-locking compound such as "Loctite".

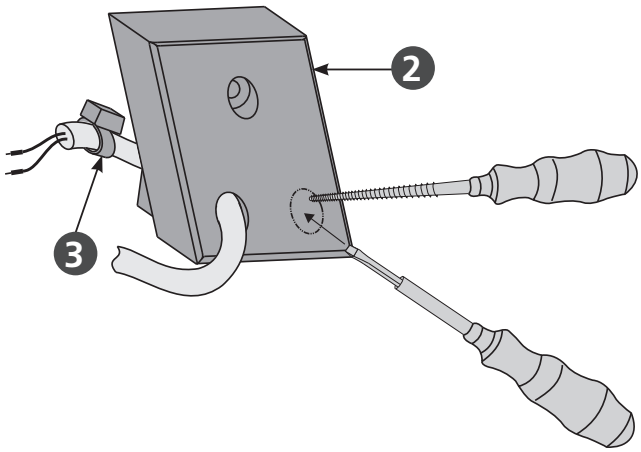


INSTALLATION STEP 7: REMOVE THE END CAPS FROM THE LOCKING DRIVE

- Loosen the screws ❶ and remove the end caps ❷ from the locking drive **FVx**.
  Remove connection cable (**AK**) for easier handling.



- If necessary, prepare end cap ❷ for another cable.
  Use screwdriver to pierce the closed drill hole. Remove the burrs. Possibly slightly enlarge drill hole.
- Feeding the cable through the new hole carefully. Provide strain relief ❸.

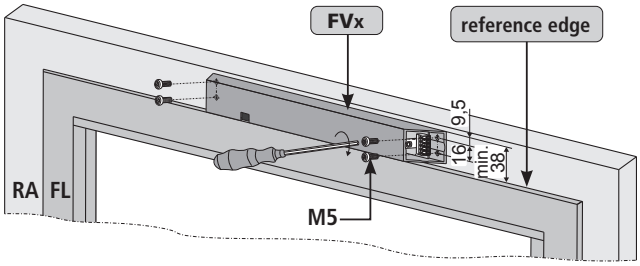


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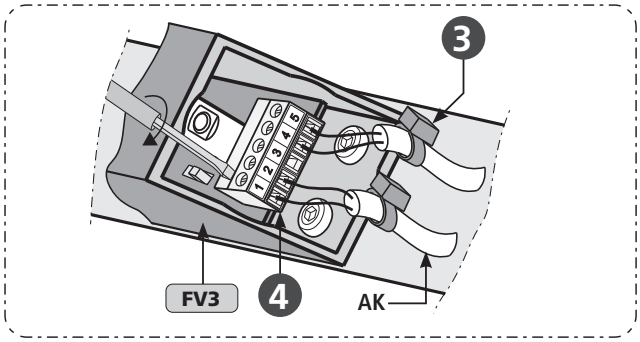
Installation step 8a: FV1/FV3/FV4 Frame assembly - inward opening windows

- Screw locking drive **FVx** onto casement frame (**M5**) - if necessary with base plate.

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

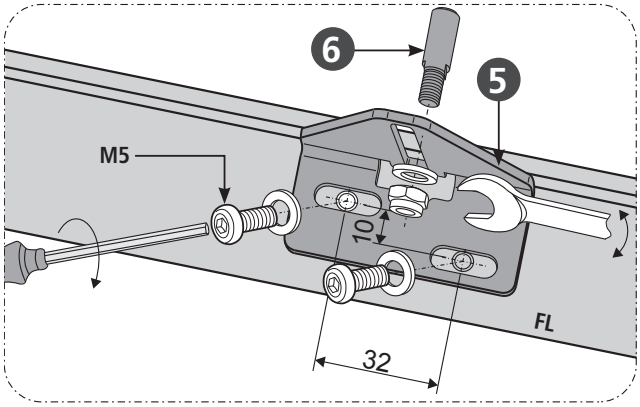


- Connect the connecting cable (**AK**) to terminal strip ❹ (see chapter „Connecting cable and DIP switch").
- Check the locking position on DIP switch. Observe the locking direction (see chapter „Connecting cable and DIP switch").

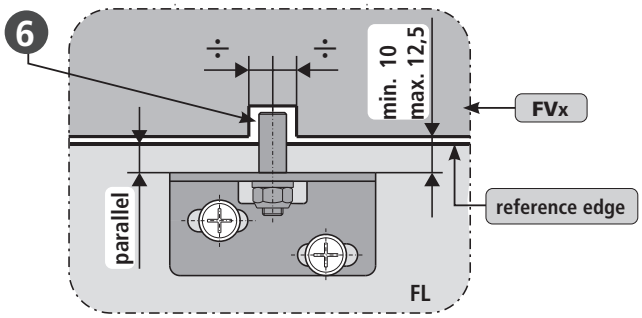


Clamp the connecting cable!
Check position from DIP switch!
(see: „**Connecting cable and DIP switch**")

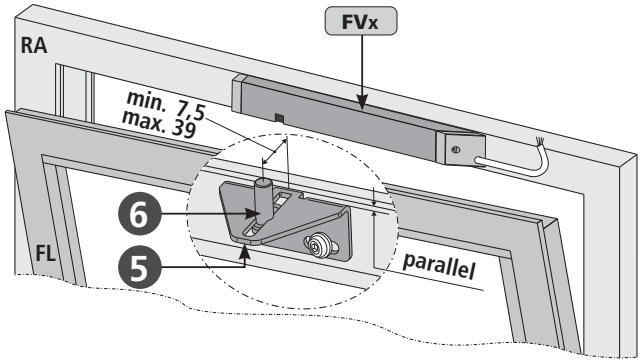
- Screw locking angle ❺ - according to site condition.
- The locking pin ❻ must be centered in the mounting slot of the locking drives **FVx**.



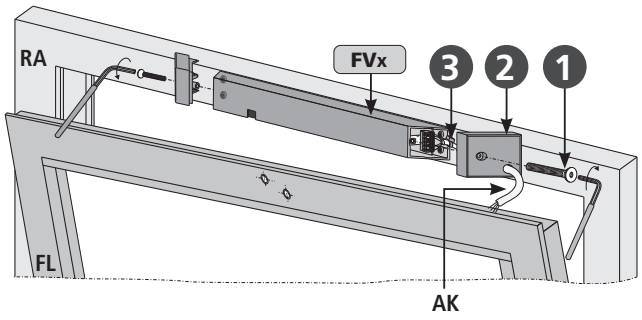
Make sure they are parallel to casement edge.



- Adjust the locking pin ❻. It should completely move into the locking drive **FVx**.
- Firmly tighten the locking pin ❻ - using spanner SW10.



- Fit end caps ❷ with screws ❶.
- Re-install strain relief ❸.



Note cable routing!
(see chapter „**Cable routing**")
Check function! (see chapter „**Safety check and Performing Test Run**").

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INSTALLATION STEP 8B:F V1/FV3/FV4 FRAME ASSEMBLY - OUTWARD OPENING WINDOWS

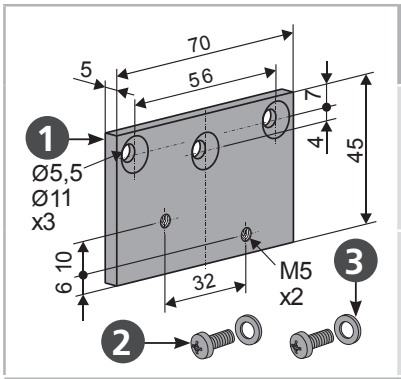
Assembly variant 1:
Locking angle B18 with adapter plate B22 (optional)

■ Screw the adapter plate **B22** ❶ onto the casement frame (**M5**).

NOTE

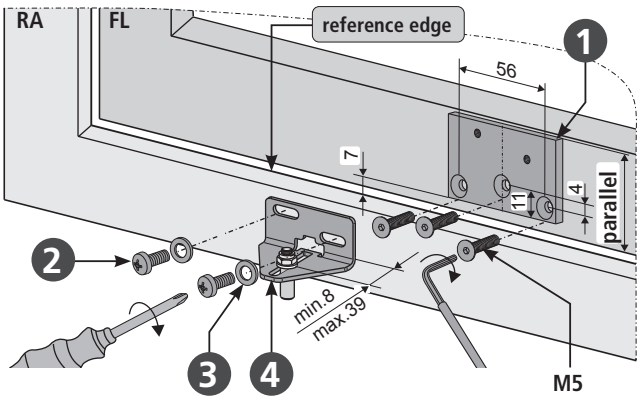
Adapter plate **B22** ❶ for relocation of the mounting holes of the locking bracket B18 outside the glasing bead of outward opening windows.
Is not included in the scope of delivery.

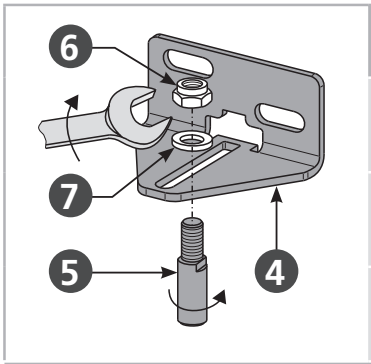
Make sure they are parallel to casement edge.



❶	**Adapter plate B22**
❷	2x screws M5x8
❸	2x washers

■ Screw locking angle **B18** ❹ onto adapter plate **B22** ❶ - using the provided screws ❷ and washers ❸.

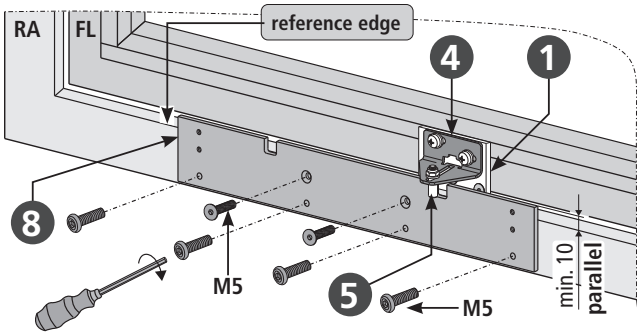




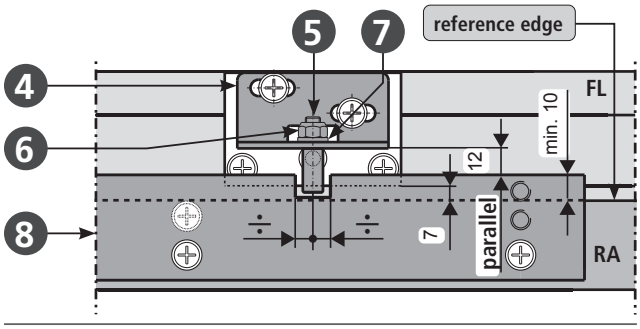
❹	**Locking angle B18**
❺	1x locking pin
❻	1x nut M6
❼	1x washer

■ Screw mounting plate ❽ for the locking drive **FVx** onto window frame (**M5**).

Align the mounting plate ❽ depending on the design of the locking drives **FVx** „right-hand / left-hand".
Make sure they are parallel to casement edge.



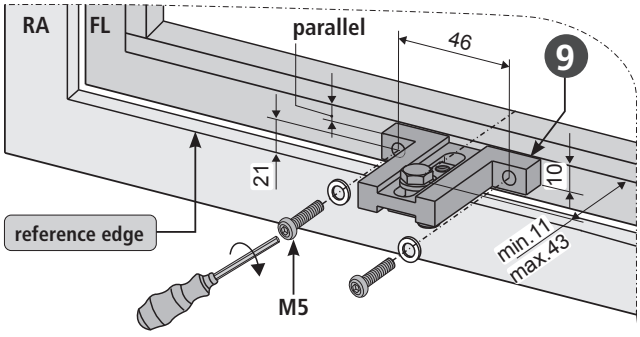
■ The locking pin ❺ must be centered in the mounting slot of the mounting plate ❽.
■ Adjust the locking pin ❺. It should completely move into the locking drive **FVx**.
■ Firmly tighten the locking pin ❺ with nut ❻ and washer ❼ (spanner SW10).



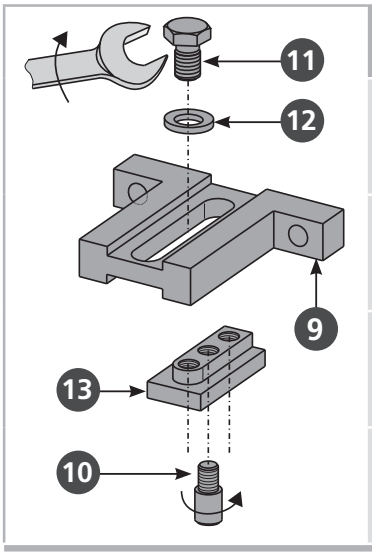
Assembly variant 2:
Locking angle B19 (small)

■ Screw the locking angle **B19** ❾ onto casement frame (**M5**).

Make sure they are parallel to casement edge.



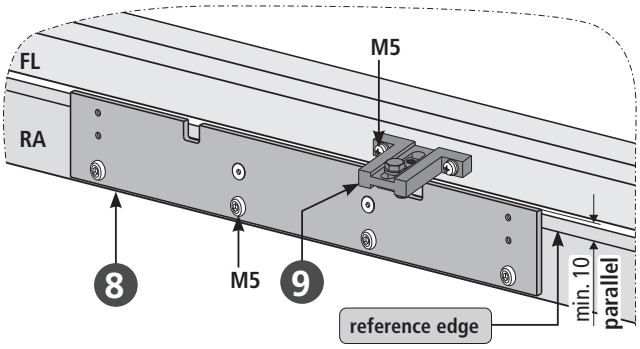
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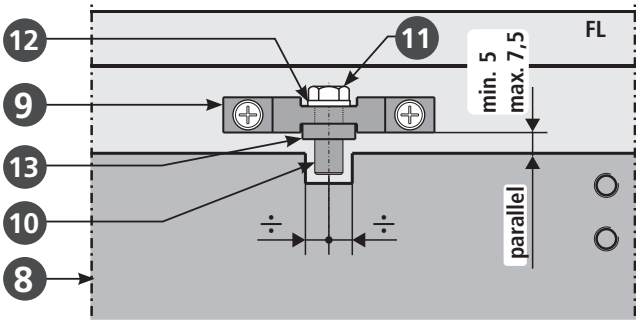
❾	**Locking bracket B19**
❿	1x locking pin
⓫	1x screw M6 x 10
⓬	1x washer
⓭	1x pin holder

■ Screw mounting plate ❽ for the locking drive **FVx** onto window frame (**M5**).

Align the mounting plate ❽ depending on the design of the locking drives **FVx** „right-hand / left-hand".
Make sure they are parallel to casement edge.

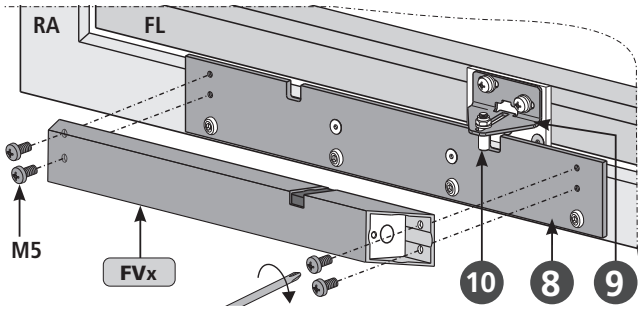


■ The locking pin ❿ must be centered in the mounting slot of the mounting plate ❽.
■ Adjust the locking pin ❿. It should completely move into the locking drive **FVx**.
■ Firmly tighten the locking pin ❿ with screw ⓫ and washer ⓬ and pin holder ⓭ (spanner SW10).



Assembly: locking drive

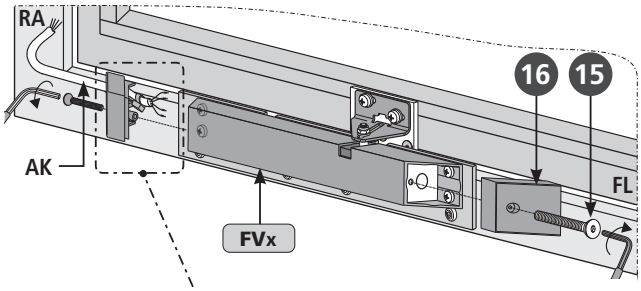
■ Screw locking drive **FVx** on mounting plate ❽ (**M5**).

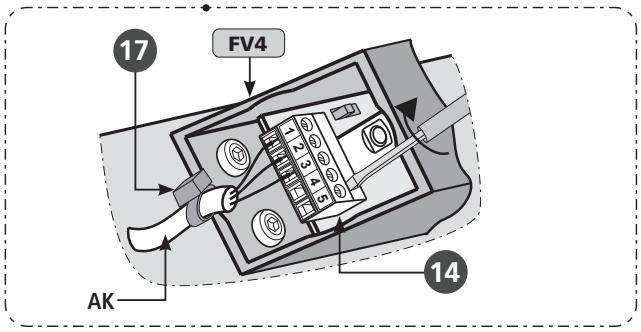


■ Connect the connecting cable (**AK**) to terminal strip ⓮ (see chapter „CONNECTING CABLE AND DIP SWITCH").
■ Check the locking position on DIP switch. Observe the locking direction of the locking fitting (see chapter „CONNECTING CABLE AND DIP SWITCH").

Clamp the connecting cable!
Check position from DIP switch!
(see: „**CONNECTING CABLE AND DIP SWITCH**")

■ Fit end caps ⓰ with screws ⓯ .
■ Re-install strain relief ⓱ .





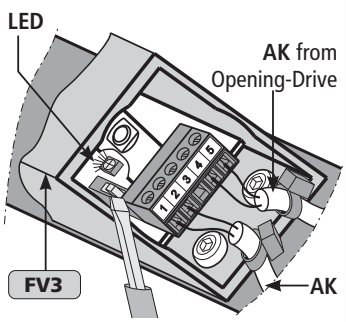
Note cable routing!
(see chapter „**CABLE ROUTING**")
Check function! (see chapter „**SAFETY CHECK AND PERFORMING TEST RUN**").

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INSTALLATION STEP 9: CONNECTING CABLE AND DIP SWITCH

FV4 FV3

FV3



Terminal **1**: blue
feed line from control unit

Terminal **2**: brown
feed line from control unit

Terminal **4**: blue *)
to the Opening-Drive

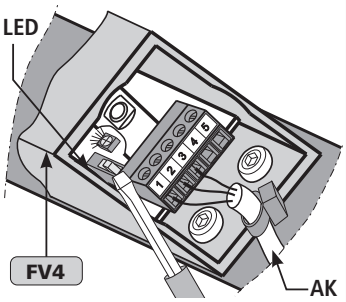
Terminal **5**: brown *)
to the Opening-Drive

*) Note the opening direction of casement.

For drives with software **S1**

The Opening-Drives **must not have** an integrated disconnection and / or an electronic overload disconnection.

FV4

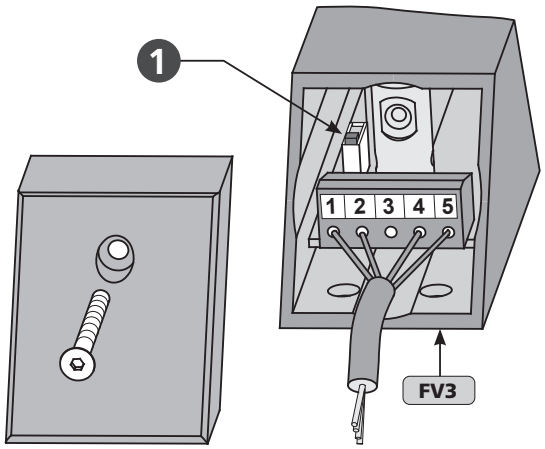


Terminal **1**: blue
Terminal **2**: brown
Terminal **3**: white

Configuration is done by **M-COM**
For drives with internal load dependent cut-off switch **S3/S12**

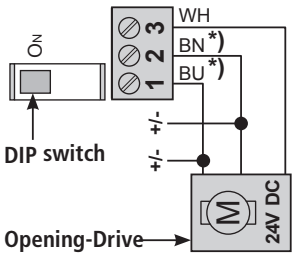
The Opening-Drives **must have** an integrated disconnection and/or an electronic overload disconnection.

The **DIP** switch ❶ in the locking drive **FVx** are used to setting the moving direction.
Set of **DIP** switch ❶ in a **voltage-free** state, when the locking drive **FVx** is not mounted.

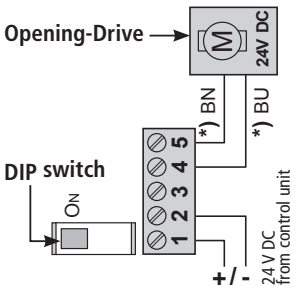


DIP switch setting: moving direction

Configuration by **M-COM** FV4

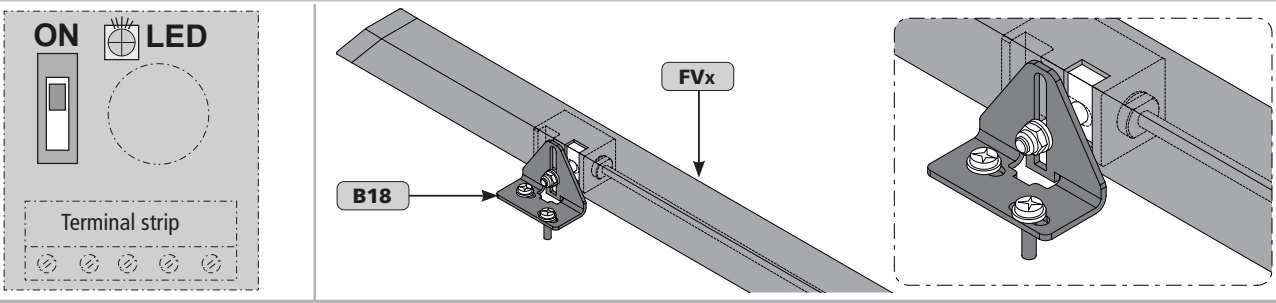


Opening-Drive with **S1** FV3

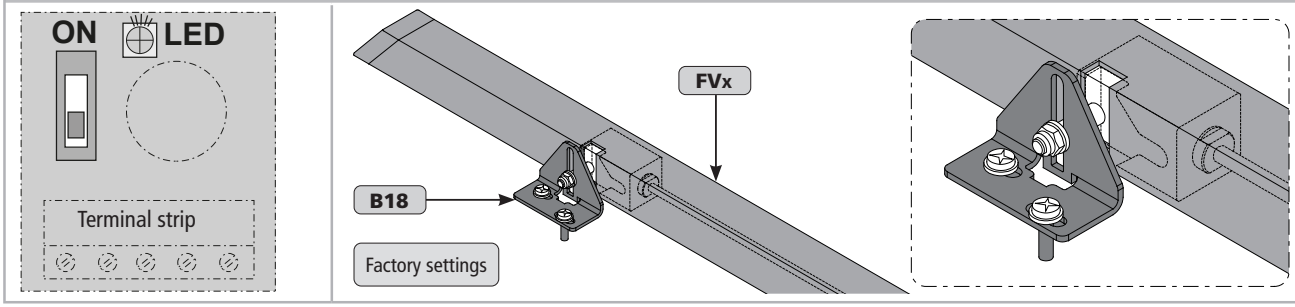


*) The connection of the Opening-Drive is dependent on the opening direction of the casement

CLOSE (locked)



OPEN (unlock)



07

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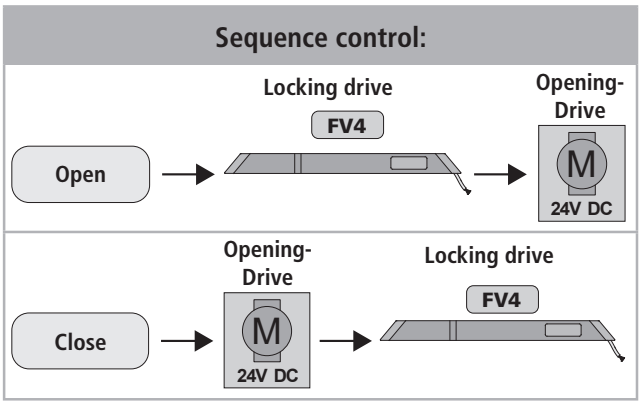
aumüller

Installation step 10a: Assembly with M-COM

FV4

Test run: locking drive

- Close the casement manually. During the test run press the casement fixed to the frame.
- **Switch on** the **control voltage** at locking drive **FV4** - in **CLOSE** direction.
- Switch the control voltage - from the locking drive **FV4** in **OPEN** direction.
- Ensure the easy movement of the casement.
- Open the casement manually.
- **Switch off** the **control voltage** from the locking drive **FV4**.



- Hinge Opening-Drive on casement.
- Make mechanical settings in accordance with „Assembly and Commissioning Instructions" of the drives.

Installation: M-COM

- Installing the **M-COM** (see separate „Installation Instructions" for M-COM) and make the electrical connection - in accordance with chapter: „Electric connection - Installation step 12".

Installing **M-COM** in a voltage-free state. The configuration is always in **CLOSE** direction.

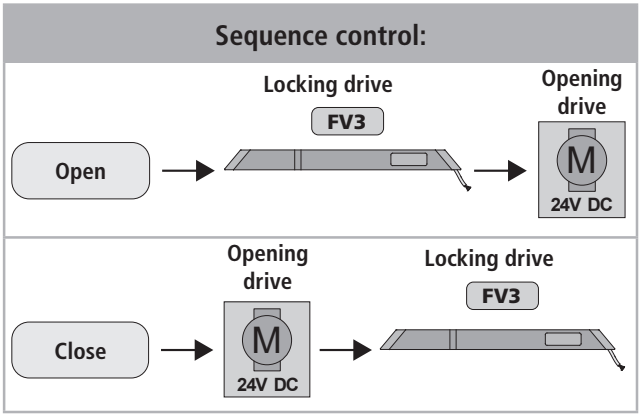
- **Switch on** the **control voltage** at locking drive **FV4** and at Opening-Drive - in **CLOSE** direction.
- **M-COM** is configured (see LED display).
- Check sequence control.
- Ensure the easy movement of the casement.

Installation step 10b: Assembly of a preprogrammed set

FV3

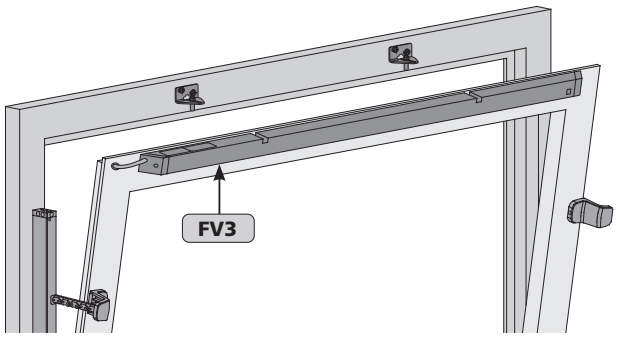
Test run: locking drive

- Close the casement manually. During the test run press the casement fixed to the frame.
- **Switch on** the **control voltage** at locking drive **FV3** and at the Opening-Drive - in **CLOSE** direction.
- Move locking drive **FV3** and Opening-Drive in **OPEN** direction.
- Ensure the easy movement of the casement.
- Open the casement manually.



Test run and installation: FV3 and Opening-Drive as a preprogrammed set

- Hinge Opening-Drive on casement.
- Make mechanical settings in accordance with „Assembly and Commissioning Instructions" of the drives.
- **Switch on** the **control voltage** at locking drive **FV3** and at the Opening-Drive - in **CLOSE** direction.
- Check sequence control.
- Ensure the easy movement of the casement.



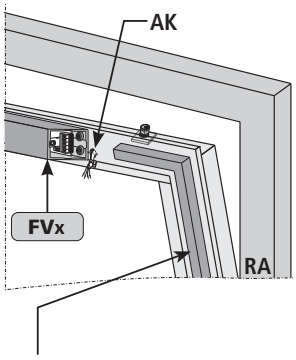
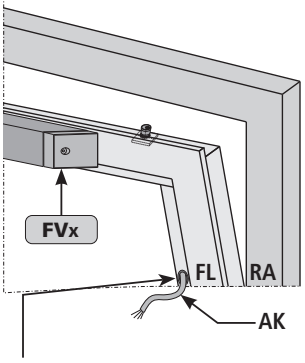
Note

When subsequent programming with **UniPC** the same assembly steps as in the installation must be carried out with **preprogrammed set** (see separate: Installation Instructions for UniPC).

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INSTALLATION STEP 11: CABLE ROUTING

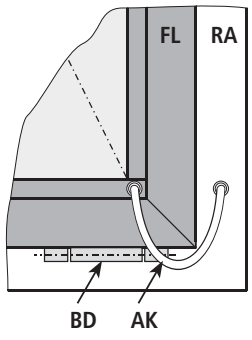
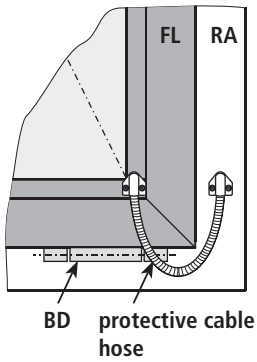
Cable routing on or in the casement

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.



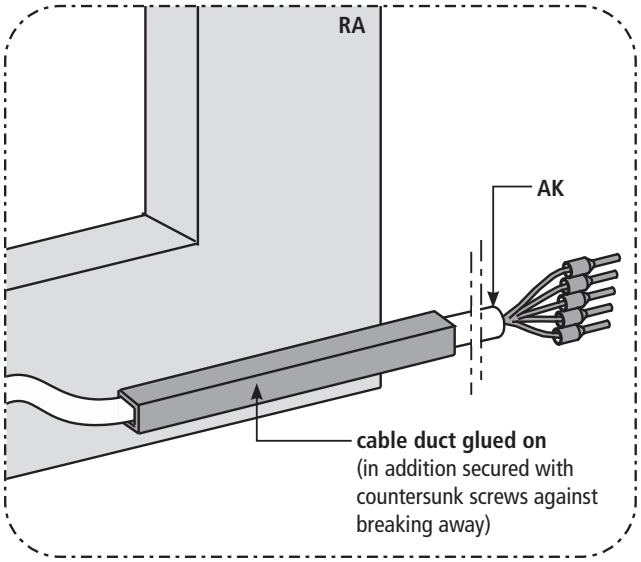
Upon removal of the glazing bead is the danger that the glass may fall.

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.

Cable routing on the frame

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



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INSTALLATION STEP 12: ELECTRIC CONNECTION

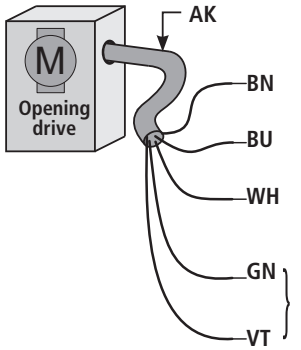
Make sure when establishing the connection that there is no voltage at the terminals!
Unused wires must be safely insulated!

Wire colour coding	
Colour	DIN IEC 757
white	WH
brown	BN
blue	BU
green	GN
violet	VT
grey	GY

Direction of travel
OPEN
CLOSE

Polarity reversal

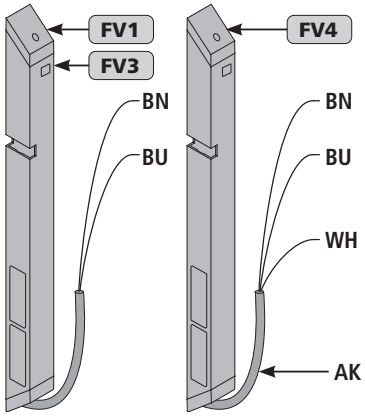
Connection assignment from the Opening-Drive



	▲	▼
BN	+	-
BU	-	+

WH is used for communication in systems with synchronized multi-drive operation.
Version Z:
contact max. 24 V, 500 mA (min. 10mA)
In drives KS4: standard „CLOSE"
optional „OPEN"

Connection assignment from the locking drive

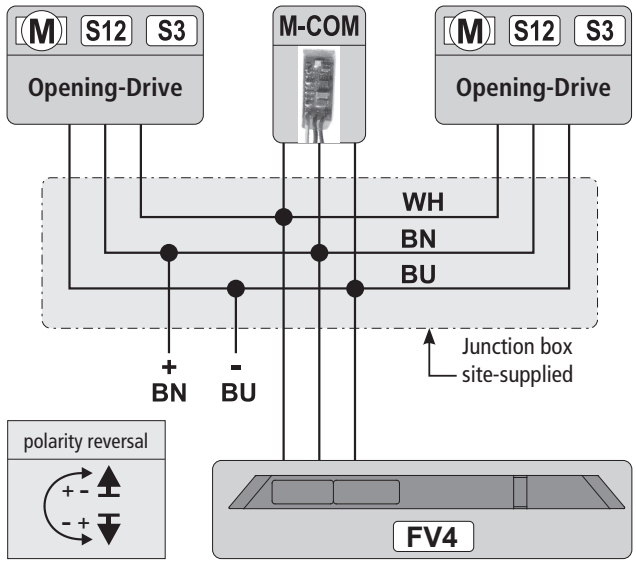


	▲	▼
BN	+	-
BU	-	+

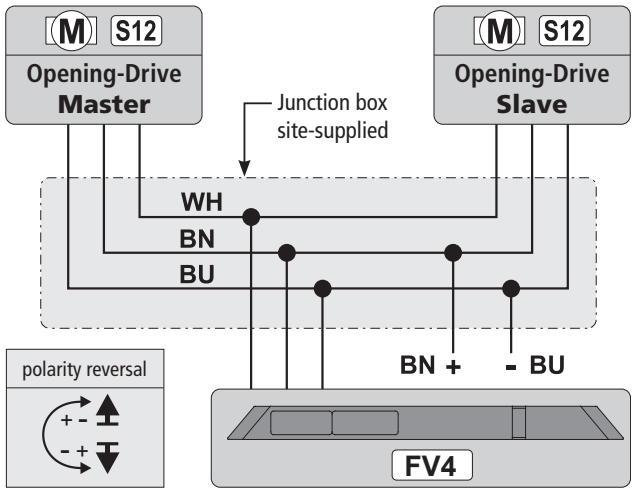
WH is used for communication in systems with synchronized multi-drive operation.

Multi-drive operation: Opening-Drive and locking drive

Configuration with **M-COM**



Opening-Drive is **Master / Slave**



The programming of the drives in multi-drive occurs at factory or on site with UniPC

WH: is used for communication, with synchronized multi-drive operation. **WH** wires connect, otherwise no function.
Optional: 1 to 4 drives and max. 2 locking drives are possible.

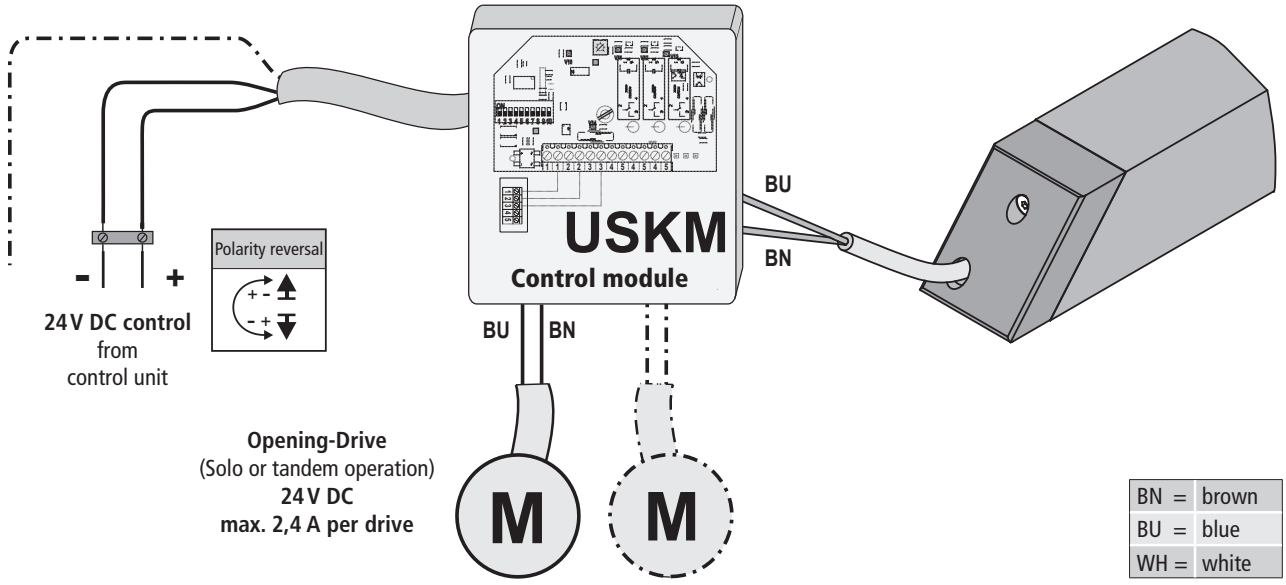
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ELECTRIC CONNECTION WITH USKM - FV1

FV1

Solo or tandem operation - locking drive **FV1**

DIP switches in the **USKM** set in accordance with the electronic cut-off switch.



BN =	brown
BU =	blue
WH =	white

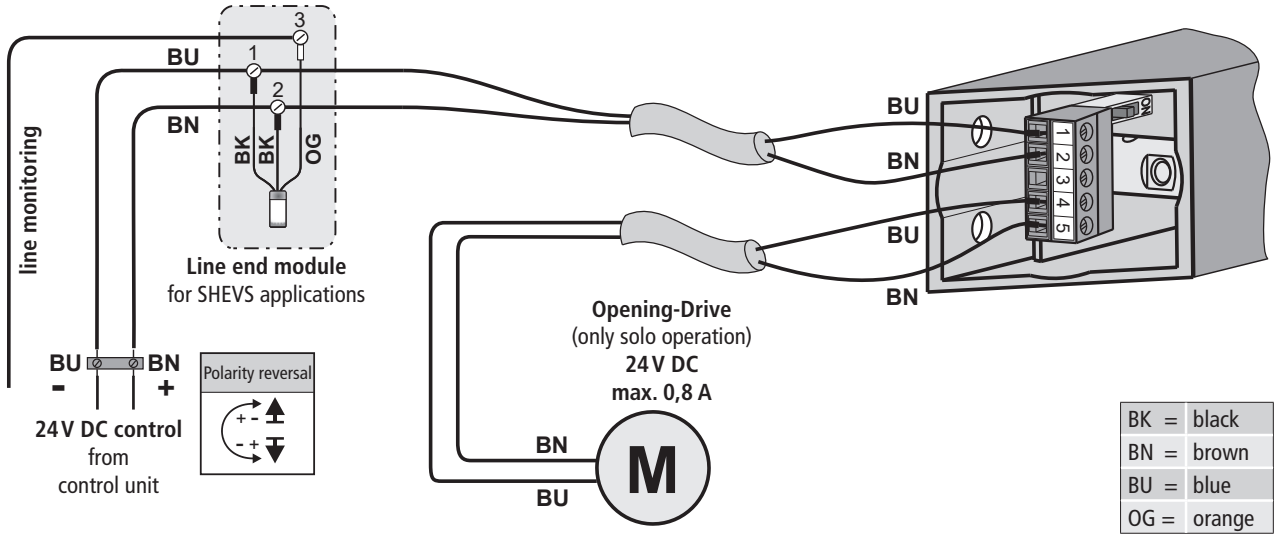
Version without sequential control module
Disconnection and sequential control for the locking drive **FV1** is provided by the controll module **USKM**.

SHEVS applications require a line monitoring (line end module) to be connected upstream of the last or the only locking drive **FV1**!

ELECTRIC CONNECTION - FV3

FV3

Solo operation - locking drive **FV3**



BK =	black
BN =	brown
BU =	blue
OG =	orange

Version with sequential control module
By applying the 24V voltage supply on terminal **1**(-) and **2** (+)
the locking mechanism unlocks the casement.
After complete opening of the casement locking the Opening-Drive on terminal **4** and **5** receives the command to move up (opening of the casement).

The Opening-Drives **must not have** an integrated disconnection nor an electronic overload disconnection. SHEVS applications require a line monitoring (line end module) to be connected upstream of the last or the only locking drive **FV3**!

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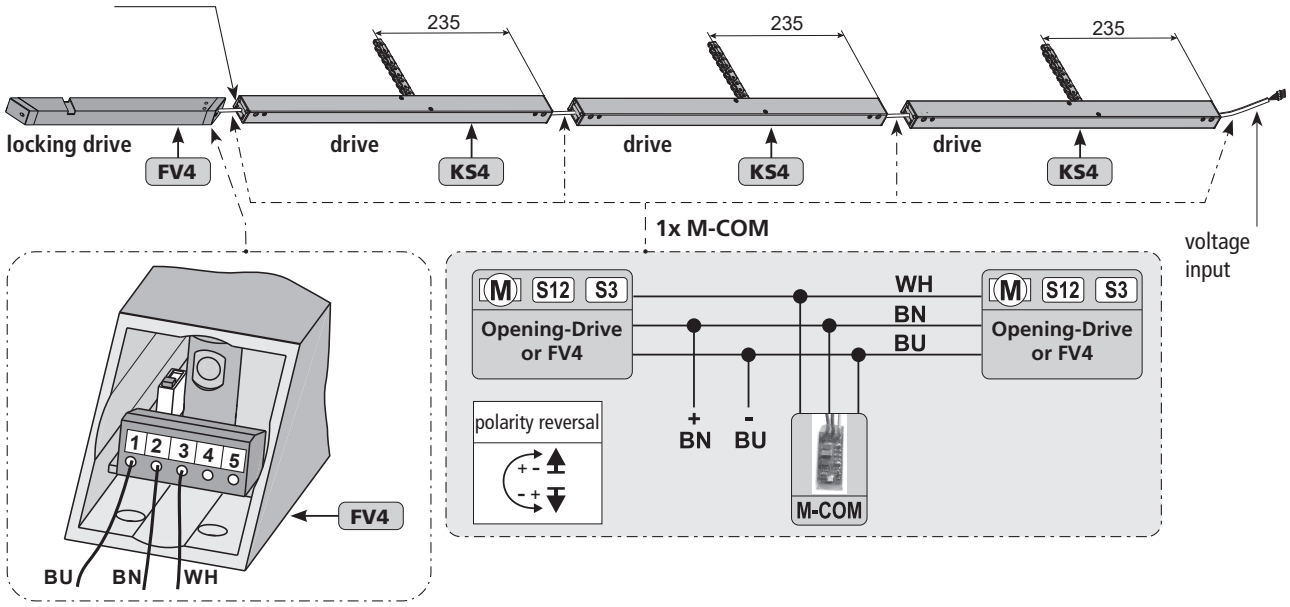
ELECTRIC CONNECTION CONFIGURED WITH M-COM

FV4

Multi-drive operation with M-COM and locking drive - series connection

Individual configuration

Remove the filler plug and
Aumüller-Click plug set install.



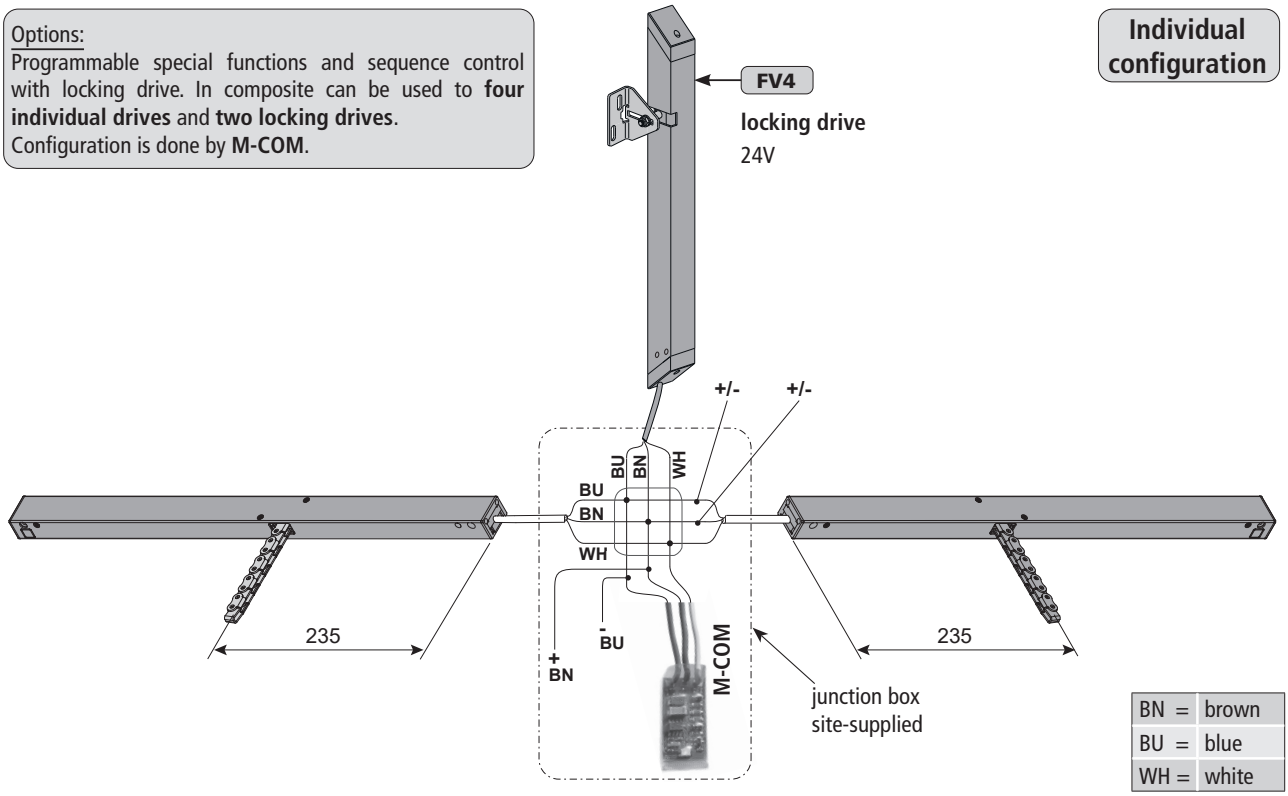
A maximum of **three individual drives** and **one locking drive** in series connection possible.
Configuration is done by **M-COM**.

BN =	brown
BU =	blue
WH =	white

Multi-drive operation with M-COM and locking drive - star wiring

Options:
Programmable special functions and sequence control with locking drive. In composite can be used to **four individual drives** and **two locking drives**.
Configuration is done by **M-COM**.

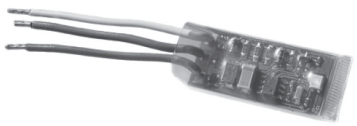
Individual configuration



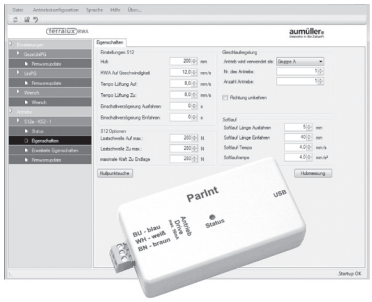
BN =	brown
BU =	blue
WH =	white

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M-COM (Main control unit)

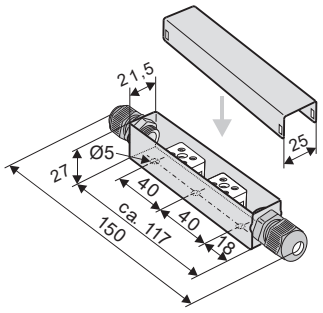
Order number:	**524177**
Application:	Configuration module for the automatic configuration and monitoring of max. 4 opening / 2 locking drives type S12 / S3 in multi-drive systems.
Rated voltage:	24V DC +/- 20%, (max. 2 Vss)
Current consumption:	<12 mA
Drive type:	S12
Protection class:	IP30 rubber jacket
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.	

UniPC with configuration interface

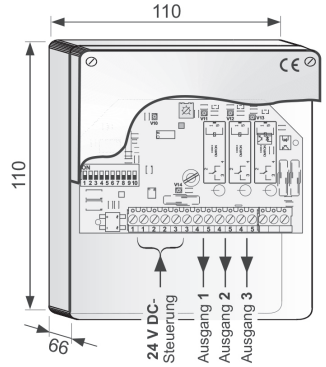
Order number:	**524178**
Application:	Hard- and software for configuration of drives supplied by AUMÜLLER GmbH
Rated voltage:	24V DC +/-20%
Parameterizable drives:	24V DC type MP, S3, S12, S12 V.2 230V AC type S12, S12 V.2
Scope of delivery:	software UniPC (Downloadlink*), Interface "ParInt", USB cable,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

Cable junction box (for renewal)

Order number:	**513344**
Application:	to extend a drive cable
Rated voltage:	only for „safety extra 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 (grey) including strain relief, with 2 loose ceramic terminals (bipolar).
	

USKM

Order number:	**512140**
Application:	Control module with 3 outputs and individual settuble cut-off current, monitored motion run, delayed sequence control.
Rated voltage:	24V DC +/- 20 %, (max. 2 Vpp)
Close circiut current:	< 50 mA
Connections:	max. 3 drives; s < 300 mm
Rated current per drive:	max. 2,5 A
Drive type:	S1, S2, S3, S12, MP, FV1, OFV1
Protection rating:	IP 54
Ambient temperature range:	0 °C ... +70 °C
Surf. mount. plastic housing:	110 x 110 x 66 mm
Features / Equipment: DIP switches for settings connection terminals: 2,5 mm² **Functions:** External electronic cut-off switch (max. 0,9 A), motion-monitoring up to 3 drives / locking drives, max. 2 sequential controls	

07

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Installation step 13:
Supply lines of Control Unit to the Drives

Observe current regulations and guidelines regarding the "Fire behavior of building materials-circuit integrity maintenance of electric cable systems" (E30, E60, E90) and the prescribed constructional regulations!

Recommendation For safety reasons a cable of the next higher wire cross section should be selected.

Formula to calculate
the required wire cross-section of a supply line **24V**

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

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** choosen

Laying and connecting the drive cable

- Avoid extreme temperature differences in the installation area (danger of condensation).
- Set clamping point close to window and ensure accessibility.
- Ensure expansion possibilities of the drive and the drive cable.
- Consider the cable length and the cross sections of the drives supply lines.

Installation step 14:
Safety check and Test run

Check the mounted system for its safety; perform test run and commissioning.

Safety test:

- Connect operating voltage.
- Check fastening (frame brackets, casement brackets) for firm fit or tightening.

Test run:

- Visual inspection of casement movements.
- Stop immediately by malfunction!
- Pay attention to collision with facade construction and correct installation, if required.

Risk evaluation:

Before operating a power-operated window to which window drives were mounted, which were sold by the manufacturer as incomplete machines according to installation declaration, the possible risk to ahazard of persons must be determined, evaluated and minimized by taking appropriate technical measures in accordance with the Machinery Directive. Separate documents for performing a risk assessment can be downloaded from the homepage of

Firm Aumüller Aumatic GmbH
(**www.aumueller-gmbh.de**).

Operation of the power-operated window

When operating the power-operated window safety instructions must be observed, specifically those pertaining to commissioning, operation and maintenance.

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Help in case of Malfunctions, Repairs and Maintenance

Professional repair of a defect drive can only be performed at the manufacturer's factory or manufacturer-certified specialist company. Unauthorized opening or manipulation of the drive terminates warranty.

1. Exchange defect drives or have them repaired by the manufacturer.
2. In case of problems during installation or normal operation the following table might be useful:

Problem	Possible causes	Possible solutions
Locking drive does not start	• Duration of mains power supply too short	• Adjust supply voltage as specified in the technical documentation
	• Drive run direction from the Opening-Drive is not correct	• Check drive cables change polarity
	• Connecting cable not connected	• Check all connection cables

Maintenance and Modification

To ensure continuous function and safety of the drive periodic maintenance by a specialist company is required at least once a year (as mandated by law for smoke and heat exhaust systems). Operational readiness must be checked regularly. Frequent inspection of the system for imbalance and signs of wear or damages of cables and fastening elements must be performed.
During maintenance contaminations must be removed from the drive. Fastenings and clamping screws must be checked for tightness. Test runs during the opening and closing procedure of the devices must be performed.
The drive itself is maintenance-free. Defect devices may only be repaired in our factory. Only replacement parts of the manufacturer may be used. When the connection cable of this device is damaged it must be replaced by the manufacturer or his customer service or a similarly qualified person to avoid endangerment.
It is recommended to conclude a maintenance contract. A sample maintenance contract can be downloaded from the homepage of

Firm Aumüller Aumatic GmbH
(**www.aumueller-gmbh.de**).

While cleaning the windows, drives may not have direct contact with water or cleaning agents. Drives must be protected from dirt and dust during the construction phase or renovations.

Maintenance process

1. Open or extend power-operated casement completely.
2. Completely disconnect the system from the mains and secure it against automatic or manual activation.
3. Check windows and fittings for damages.
4. Check all mechanical fastenings (if required, observe information on torques in installation instructions).
5. Check electric drives for damages and contaminations.
6. Check connecting cables (drive cable) for:
   - tightness of the cable screw
   - functionality of the strain relief
   - damages
7. Check the mobility of hinges and fittings and re-adjust or apply lubricant, e.g. silicone spray (observe the instructions of the manufacturer of this window system).
8. Check peripheral seal, remove contaminations or replace.
9. Perform cleaning to maintain functionality (e.g. clean extending elements of the drive, such as chains or spindles by damp wiping them with acid or lye-free agents and drying them and, if required, lubricate them with cleansing oil e.g., Ballistol).
10. Turn on operating voltage.
11. Open and close the power-operated window via the operating voltage (functional test).
12. If available, check and re-adjust protection systems of the safe guard fixture.
13. Check the intactness of the CE label at the power-operated system (e.g. SHEV/Natural smoke and heat exhaust ventilators).
14. Check the intactness of warning instructions and labels at the respective drive.
15. Perform a risk assessment in accordance with Machinery Directive 2006 / 42 / EG, if required, e.g. after modifying the machine.

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Demounting

The drives are demounted by reversing the steps, as for the installation. The adjustments are omitted.

1. Completely disconnect the system from the power supply before demounting a drive.
2. After demounting a drive the window must be secured against independent opening.

Dispose of parts according to the locally applicable legal provisions.

Disposal

According to the European Directive 2012/19 / EU on Waste Electrical and Electronic Equipment (WEEE) and its transposition into national law, obsolete electrical appliances must be collected separately and sent for environmentally friendly recycling.





Liability

We reserve the right to change or discontinue 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.

Warranty and Customer Service

In principal apply our:

„General Terms for the Supply of Products and Services of the German Electrical Industry (ZVEI)".

The warranty corresponds with legal provisions and applies to the country in which the product has been acquired.
The warranty includes material and manufacturing defects incurred during normal use.

The warranty period for delivered material is twelve months.

Warranty and liability claims for personal injuries or material damages are excluded, if caused by one or more of the following:

- No proper incoming goods inspection.
- Improper use of the product.
- Improper installation, commissioning, operation, maintenance or repair of the product.
- Operating the product by defect and improper installed or not functioning safety and protection devices.
- Ignoring instructions and installation requirements in these instructions.
- Unauthorized constructional modifications at the product or accessories.
- Disaster situations due to effects of foreign bodies and Acts of God.
- Wear and tear.

Contact persons for possible warranty claims, for spare parts or accessories are the employees of the responsible branch office or the responsible person at

Firm Aumüller Aumatic GmbH.

Contact data are available at our homepage

(www.aumueller-gmbh.de)

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Certificate and Declaration of Conformity

We declare under our sole responsibility that the product described under "Data sheet" is in conformity with the following directives:

- 2014/30/EU
  Directive relating to Electro-Magnetic Compatibility
- 2014/35/EU
  Low voltage Directive

CE

We further declare that the drive is an incomplete machine within the meaning of the European Machinery Directive (2006/45/EG).

Technical file and declaration at firm:

Aumüller Aumatic GmbH
Gemeindewald 11
D-86672 Thierhaupten

Ramona Meinzer
Managing Director (Chairman)

Note:

The proof of the application of a quality management system is for company:

Aumüller Aumatic GmbH

according to the certification basis **DIN EN 9001** as well the "Declaration of Incorporation and Conformity" can be accessed via the QR code or directly on our homepage:

(www.aumueller-gmbh.de)

Translation of the original instructions (German)

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.

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