Assembly and Commissioning Instructions

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



PLA S3 / S12 24V DC SPINDLE DRIVE FOR WINDOWS

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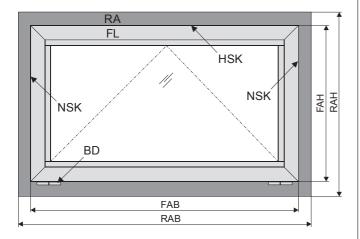
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ABBREVIATIONS

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.

А	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
\rightarrow	opening direction



TARGET GROUP

These instructions are intended for trained personnel and operators of systems for natural smoke ventilation (NRA / SHEV) (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 IN-STRUCTIONS:

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



Failure to comply with the warning notes results in irreversible injuries or death.



Failure to comply with the warning notes can result in irreversible injuries or death.



Failure to comply with the warning notes can result in minor or moderate (reversible) injuries.



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.

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.

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 prime 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, combined with a suitable external control unit, the electromotive operated window ensures fresh air supply for the natural ventilation of the building.

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 to the Declaration of Conformity

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

In accordance with the attached Declaration of Conformity the drive, in combination with an external Control Unit from Aumüller, is released for its intended use at a power-operated window without an additional on-site risk assessment for the following use:

- Application for natural ventilation
 - with an installation height of the drive of at least 2,5 m above the floor, or
 - with an opening width at the HSK of the operated element of < 200 mm by a simultaneous speed of < 15 mm/s at the HSK in closing direction.
- Application as NSHEV (natural smoke and heat exhaust ventilators) for ventilation without dual function for ventilation in accordance with EN12101-2.

№ WARNING

Attention must be paid to possible hazards when used with 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 by law to evaluate the hazards to persons, originating from the usage, installation position, opening parameters as well as the planned type of installation of the power operated window and the external Control Unit, 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 theire own responsibility and detect or minimize possible remaining risks.

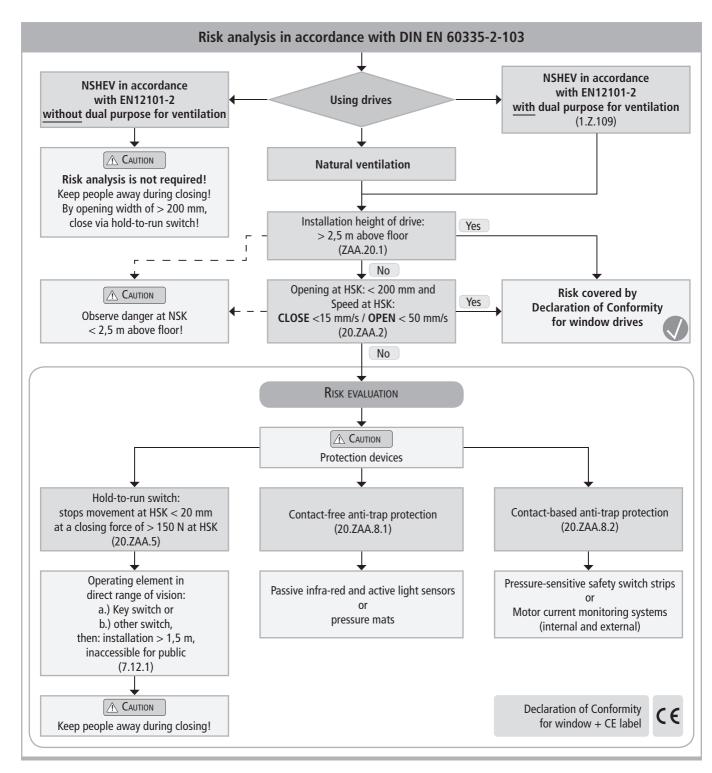
The need for a risk assessment at the installation site due to the reasonably foreseeable misuse.

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 is < 2,5 m above the floor and
- 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.





Casement data

Facade: bottom-hung window, top-hung win-

dow, side-hung window.

Dach: roof window / sky light.
Opening direction: inward / outward opening.

Profile material: aluminum, steel, plastic or wood.

Nоте

The casement measurements supplied are only for orientation purposes.

It is imperative that the **force-path diagram** of the drives are observed.

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

- total weight of casement (glass + frame),
- additional loads: snow load / wind load (suction / pressure),
- casement size (FAB x FAH),
- side ratio FAB / FAH,
- installation / inclination angle,
- required opening area (geometric / aerodynamic),
- crosswind influences,
- driving force and stroke,
- mounting site at the window frame and casement frame.

SAFETY INSTRUCTIONS



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.



Do not misuse the drive for other lifting operations! Do not allow children to play with this drive or its regulating and / or control units, 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 machine plate) 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!

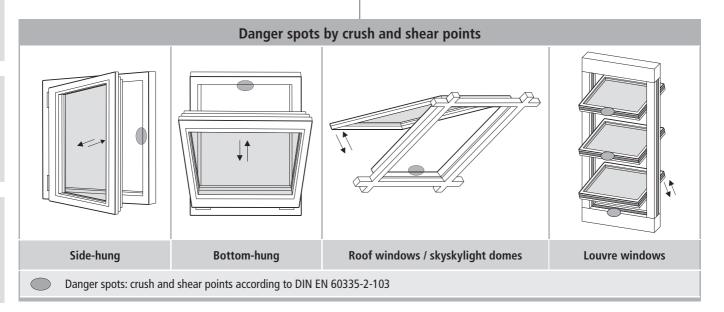
Do not reach into the window rabbet or the operating element (chain or spindle) during installation and operation! Ensure that, based on the installation position and the opening movement of the casement, persons cannot be trapped between the driven part of the window and surrounding fixed components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

Mounting material

The required mounting material must be modified to fit 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!



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.

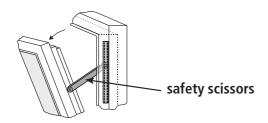
Unintentional or independent opening or falling

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.



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



Routing cables and electrical connection

Routing or installing electrical lines and connections may be performed only by approved 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 instructions shall be observed for the installation, specifically:

- VDE 0100 Setting up high-voltage systems up to 1000 V
- VDE 0815 Wiring cables
- Specimen Guideline on Conduits German designation (MLAR).



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!



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 into closed 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 systems shall be ensured for maintenance work.

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 introduced to all important operating steps. If necessary, he must be advised of all remaining risks / dangers.

The end-user shall be instructed in intended use of the drives and, if necessary, the safety instructions. The end-user shall be specifically instructed that no additional forces, except for the pressure and tension 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!

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.



Do not use drive or casement when repair or re-setting work has to be 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 replacement 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 ... +75°C Relative humidity: < 90% less 20°C;

< 50% less 40°C;

no formation of condensation

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 (UVV and workmen's compensation insurance quidelines (BGR /ASR) shall be observed and adhered to.

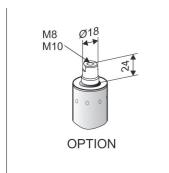
Declaration of Conformity

The drive is manufactured and inspected in accordance with European guidelines. The respective Declaration of Conformity is on hand.

In case the operation of the drive differs from the intended use, a risk evaluation for the complete power-operated window system shall be performed and a Declaration of Conformity according Machinery Directive 2006 / 42 / EG issued.



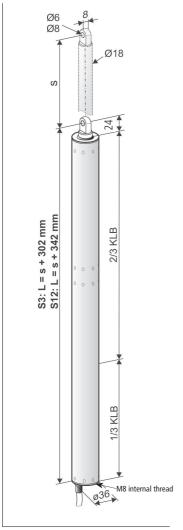
DATA SHEET PLA6 S3 / S12 24V DC



- Application: natural ventilation, SHEV, ferralux®-NSHEV Options
- Spindle tube with interior thread for clevis
- Eyebolt and clevis for rear suspention

S3

- Internal load dependend cut-off switch, post cycle resistant S3
- Programmable motion monitored run (up to 300 mm stroke)
- Programmable sequence control with locking drives (S3 / S12)

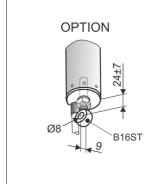


S12

■ Internal Intelligent Control Electronics S12

- Programmable synchronised run (max. 4 drives) and special functions
- M-COM for automatic synchronised run of multi drive systems and automatic sequence control with locking drives (S3 / S12)

TECHNICAL DATA					
U_N	Rated voltage	24V DC (± 20%), max. 2 Vpp			
I _N	Rated current	0,6 A			
I _A	Cut-off current	0,8 A			
P_N	Rated power	15 W			
ED	Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)			
	Protection rating	IP 65			
1	Ambient temperature range	-5 °C +75 °C			
F_{z}	Pulling force max.	600 N			
$F_{_{\!A}}$	Pushing force	F (N) Schub Push 600 400 300 1000 1100 1200 S (mm)			



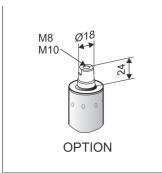
F_{H}	Pullout force	5000 N (fastening depended)
	Spindle tube	stainless steel
	Connecting cable	non-halogen, grey 3 x 1,0 mm², ~ 3 m
V	Speed	X ₌ 6,0 mm/s ≥ 6,0 mm/s
S	Stroke	100 – 1000 mm (± 5%)
L	Length	S3: s + 302 mm (see order data) S12: s + 342 mm (see order data)
	Sound pressure level A	≤ 70 dB (A)

ORDER DATA							
s [mm]	L [mm]	Version	Finish	PU/pcs.	PartNo.		
100	402	PLA6 100 S3	E6/C-0	1	564110		
100	442	PLA6 100 S12	10/0 0	1	546310		
200	502	PLA6 200 S3	E6/C-0	1	564121		
200	542	PLA6 200 S12	L0/C-0	1	546320		
300	602	PLA6 300 S3	F6/C 0	1	564130		
300	642	PLA6 300 S12	E6/C-0	1	546330		
400	702	PLA6 400 S3	E6/C-0	1	564140		
400	742	PLA6 400 S12		1	546340		
F00	802	PLA6 500 S3	F.C.I.C. 0	1	564150		
500	842	PLA6 500 S12	E6/C-0	1	546350		
600	902	PLA6 600 S3	E6/C-0	1	564160		
600	942	PLA6 600 S12	E6/C-0	1	546360		
750	1052	PLA6 750 S3	FC/C 0	1	564175		
750	1092	PLA6 750 S12	E6/C-0	1	546375		
1000	1302	PLA6 1000 S3	FC/C O	1	564200		
1000	1342	PLA6 1000 S12	E6/C-0	1	546400		

OPTIONS			
Special model	PU/pcs.	PartNo.	
Front Fixing			
Spindle tube with interior thread M8	1	515061	
Spindle tube end with interior thread M10	1	515060	
Drive housing painted/powder coated in other RAL colours			
Lump sum for coating		516030	
	1 - 20	516004	
Specify at order stage:	21 - 50	516004	
specify at order stage.	51 - 100	516004	
	up 101	516004	
Extra length connecting cable:			
5 m – non-halogen, grey – 3 x 1,0 mm²		501037	
10 m – non-halogen, grey – 3 x 1,0 mm²		501039	
Mechanic stroke reduction S3			
w/o basic lenght shortening of housing	1	516000	
Accessories for front / rear suspension			
B16ST Eyebolt Ø8 mm, galvanized	1	100044	
B16VA Eyebold Ø8 mm, stainless steel	1	100144	
B27ST Clevis M8x16 mm, galvanized, thread M8x45 mm	1	105510	
B28ST Clevis M10x20 mm, galvanized, thread M10x50 mm	1	105520	
Microprocessor programming S3			
Motion monitored run / sequence control	1	524181	
Microprocessor programming S12			
Electronic stroke reduction 24V S12		524190	
Programming drives 24V / 230V S12		524180	
Optional accessories	PU/pcs.	PartNo.	
M-COM Configuration module for synchronised multi-drive systems	1	524177	



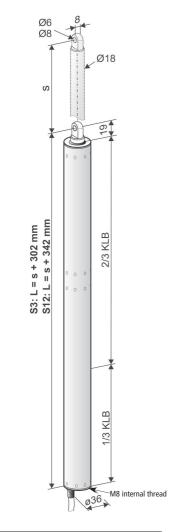
DATA SHEET PLAS S3 / S12 24V DC



- Application: natural ventilation, SHEV, ferralux®-NSHEV Options
- Spindle tube with interior thread for clevis
- Eyebolt and clevis for rear suspention

S3

- Internal load dependend cut-off switch, post cycle resistant S3
- Programmable motion monitored run (up to 300 mm stroke)
- Programmable sequence control with locking drives (S3 / S12)

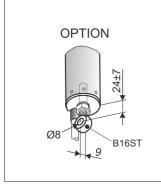


S12

■ Internal Intelligent Control Electronics S12

- Programmable synchronised run (max. 4 drives) and special functions
- M-COM for automatic synchronised run of multi drive systems and automatic sequence control with locking drives (S3 / S12)

TEC	TECHNICAL DATA					
$U_{_{\rm N}}$	Rated voltage	24V DC (± 20%), max. 2 Vpp				
I _N	Rated current	1,0 A				
I_A	Cut-off current	1,4 A				
P_N	Rated power	24 W				
ED	Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)				
	Protection rating	IP 65				
1	Ambient temperature range range	-5 °C +75 °C				
F _z	Pulling force max.	800 N				
F _A	Pushing force	F (N) Schub Push 800 700 600 2/3 KLB				



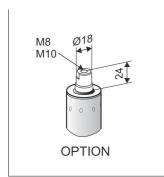
F _H	Pullout force	5000 N (fastening depended)
	Spindle tube	stainless steel
	Connecting cable	non-halogen, grey 3 x 1,0 mm², ~ 3 m
V	Speed	⅓ 10,0 mm/s
S	Stroke	100 – 1000 mm (± 5%)
L	Length	S3: s + 302 mm (see order data) S12: s + 342 mm (see order data)
	Sound pressure level A	≤ 70 dB (A)

ORDER DATA						
s [mm]	L [mm]	Version	Finish	PU/pcs.	PartNo.	
100	402	PLA8 100 S3	E6/C-0	1	523710	
100	442	PLA8 100 S12	L0/C-0	1	515210	
200	502	PLA8 200 S3	E6/C-0	1	523720	
200	542	PLA8 200 S12	E0/C-0	1	515220	
200	602	PLA8 300 S3	E6/C-0	1	523730	
300	642	PLA8 300 S12		1	515230	
400	702	PLA8 400 S3	E6/C-0	1	523740	
400	742	PLA8 400 S12		1	515240	
F00	802	PLA8 500 S3	E6/C-0	1	523750	
500	842	PLA8 500 S12		1	515250	
600	902	PLA8 600 S3	E6/C-0	1	523760	
600	942	PLA8 600 S12		1	515260	
750	1052	PLA8 750 S3	FC/C 0	1	523775	
750	1092	PLA8 750 S12	E6/C-0	1	515275	
4000	1302	PLA8 1000 S3	F5/5 0	1	523800	
1000	1342	PLA8 1000 S12	E6/C-0	1	515295	

OPTIONS			
Special model	PU/pcs.	PartNo.	
Front Fixing			
Spindle tube with interior thread M8	1	515061	
Spindle tube end with interior thread M10	1	515060	
Drive housing painted/powder coated in other RAL colours			
Lump sum for coating		516030	
	1 - 20	516004	
Specify at order stage:	21 - 50	516004	
Specify at order stage.	51 - 100	516004	
	up 101	516004	
Extra length connecting cable:			
5 m – non-halogen, grey – 3 x 1,0 mm ²		501037	
10 m – non-halogen, grey – 3 x 1,0 mm ²		501039	
Mechanic stroke reduction S3			
w/o basic lenght shortening of housing	1	516000	
Accessories for front / rear suspension			
B16ST Eyebolt Ø8 mm, galvanized	1	100044	
B16VA Eyebold Ø8 mm, stainless steel	1	100144	
B27ST Clevis M8x16 mm, galvanized, thread M8x45 mm	1	105510	
B28ST Clevis M10x20 mm, galvanized, thread M10x50 mm	1	105520	
Microprocessor programming S3			
Motion monitored run / sequence control	1	524181	
Microprocessor programming S12			
Electronic stroke reduction 24V S12		524190	
Programming drives 24V / 230V S12		524180	
Optional accessories	PU/pcs.	PartNo.	
M-COM Configuration module for synchronised multi-drive systems	1	524177	



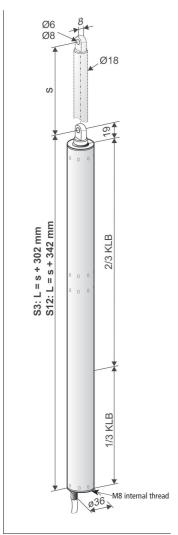
DATA SHEET PLA101 S3 / S12 24V DC



- Application: natural ventilation, SHEV, ferralux®-NSHEV *Options*
- Spindle tube with interior thread for clevis
- Eyebolt and clevis for rear suspention

S3

- Internal load dependend cut-off switch, post cycle resistant S3
- Programmable motion monitored run (up to 300 mm stroke)
- Programmable sequence control with locking drives (S3 / S12)

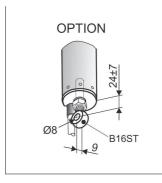


S12

■ Internal Intelligent Control Electronics S12

- Programmable synchronised run (max. 4 drives) and special functions
- M-COM for automatic synchronised run of multi drive systems and automatic sequence control with locking drives (S3 / S12)

TECHNICAL DATA						
$U_{_{\rm N}}$	Rated voltage	24V DC (± 20%), max. 2 Vpp				
I _N	Rated current	0,8 A				
I_A	Cut-off current	1,0 A				
P_N	Rated power	19 W				
ED	Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)				
	Protection rating	IP 65				
*	Ambient temperature range	-5 °C +75 °C				
F _z	Pulling force max.	1000 N				
F _A	Pushing force	F (N) Schub Push 1000 800 600 400 0 1000 1100 1200 1/3 KLB 8 (mm)				



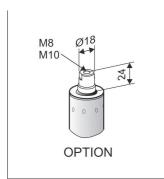
F _H	Pullout force	5000 N (fastening depended)
	Spindle tube	stainless steel
	Connecting cable	non-halogen, grey 3 x 1,0 mm², ~ 3 m
V	Speed	¼ 4,6 mm/s ≥ 4,6 mm/s
S	Stroke	100 – 1000 mm (± 5 %)
L	Length	S3: s + 302 mm (see order data) S12: s + 342 mm (see order data)
	Sound pressure level A	≤ 70 dB (A)

ORDER	ORDER DATA						
s [mm]	L [mm]	Version	Finish	PU/pcs.	PartNo.		
100	402	PLA101 100 S3	E6/C-0	1	565110		
100	442	PLA101 100 S12	L0/C-0	1	564910		
200	502	PLA101 200 S3	FC/C 0	1	565120		
200	542	PLA101 200 S12	E6/C-0	1	564922		
200	602	PLA101 300 S3	E6/C-0	1	565130		
300	642 PLA10	PLA101 300 S12		1	564930		
400	702	PLA 01 400 S3	E6/C-0	1	565140		
400	742	PLA101 400 S12		1	564940		
F00	802	PLA101 500 S3	T6/C 0	1	565150		
500	842	PLA101 500 S12	E6/C-0	1	564950		
500	902	PLA101 600 S3	FC/C O	1	565160		
600	942	PLA101 600 S12	E6/C-0	1	564960		
750	1052	PLA101 750 S3	FC/C 0	1	565175		
750	1092	PLA101 750 S12	E6/C-0	1	564975		
1000	1302	PLA101 1000 S3	TG/C O	1	565200		
1000	1342	PLA101 1000 S12	E6/C-0	1	565000		

OPTIONS			
Special model	PU/pcs.	PartNo.	
Front Fixing			
Spindle tube with interior thread M8	1	515061	
Spindle tube end with interior thread M10	1	515060	
Drive housing painted/powder coated in other RAL colours			
Lump sum for coating		516030	
	1 - 20	516004	
Specify at order stage:	21 - 50	516004	
specify at order stage.	51 - 100	516004	
	up 101	516004	
Extra length connecting cable:			
5 m – non-halogen, grey – 3 x 1,0 mm²		501037	
10 m – non-halogen, grey – 3 x 1,0 mm ²		501039	
Mechanic stroke reduction S3			
w/o basic lenght shortening of housing	1	516000	
Accessories for front / rear suspension			
B16ST Eyebolt Ø8 mm, galvanized	1	100044	
B16VA Eyebold Ø8 mm, stainless steel	1	100144	
B27ST Clevis M8x16 mm, galvanized, thread M8x45 mm	1	105510	
B28ST Clevis M10x20 mm, galvanized, thread M10x50 mm	1	105520	
Microprocessor programming S3			
Motion monitored run / sequence control	1	524181	
Microprocessor programming S12			
Electronic stroke reduction 24V S12		524190	
Programming drives 24V / 230V S12		524180	
Optional accessories	PU/pcs.	PartNo.	
M-COM Configuration module for synchronised multi-drive systems	1	524177	



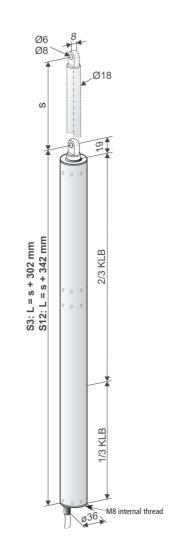
DATA SHEET PLA116 S3 / S12 24V DC



- Application: natural ventilation, SHEV, ferralux®-NSHEV Options
- Spindle tube with interior thread for clevis
- Eyebolt and clevis for rear suspention

S3

- Internal load dependend cut-off switch, post cycle resistant S3
- Programmable motion monitored run (up to 300 mm stroke)
- Programmable sequence control with locking drives (S3 / S12)

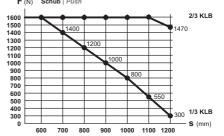


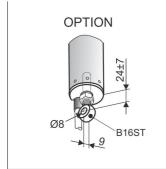
S12

■ Internal Intelligent Control Electronics S12

- Programmable synchronised run (max. 4 drives) and special functions
- M-COM for automatic synchronised run of multi drive systems and automatic sequence control with locking drives (S3 / S12)

TE	CHNICAL DATA	
U_{N}	Rated voltage	24V DC (± 20%), max. 2 Vpp
I _N	Rated current	1,0 A
I_A	Cut-off current	1,2 A
P_N	Rated power	24 W
ED	Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)
	Protection rating	IP 65
*	Ambient temperature range	-5 °C +75 °C
F _z	Pulling force max.	1600 N
F _A	Pushing force	F(N) Schub Push





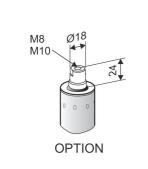
F _H	Pullout force	5000 N (fastening depended)
	Spindle tube	stainless steel
	Connecting cable	non-halogen, grey 3 x 1,0 mm², ~ 3 m
V	Speed	X 4,0 mm/s ≥ 4,0 mm/s
S	Stroke	100 – 1000 mm (± 5%)
L	Length	S3: s + 302 mm (see order data) S12: s + 342 mm (see order data)
	Sound pressure level A	≤ 70 dB (A)

ORDER DATA							
s [mm]	L [mm]	Version	Finish	PU/pcs.	PartNo.		
100	402	PLA 116 100 S3	E6/C-0	1	565310		
100	442	PLA 116 100 S12	E0/C-0	1	565510		
200	502	PLA 116 200 S3	T6/C 0	1	565320		
200	542	PLA 116 200 S12	E6/C-0	1	565520		
300	602	PLA 116 300 S3	E6/C-0	1	565330		
300	642	PLA 116 300 S12		1	565530		
400	702	PLA 116 400 S3	E6/C-0	1	565340		
400	742	PLA 116 400 S12	E6/C-U	1	565540		
F00	802	PLA 116 500 S3	T6/C 0	1	565350		
500	842	PLA 116 500 S12	E6/C-0	1	565550		
600	902	PLA 116 600 S3	EGIC O	1	565360		
600	942	PLA 116 600 S12	E6/C-0	1	565560		
750	1052	PLA 116 750 S3	T6/C 0	1	565375		
750	1092	PLA 116 750 S12	E6/C-0	1	565575		

OPTIONS			
Special model	PU/pcs.	PartNo.	
Front Fixing			
Spindle tube with interior thread M8	1	515061	
Spindle tube end with interior thread M10	1	515060	
Drive housing painted/powder coated in other RAL colours			
Lump sum for coating		516030	
	1 - 20	516004	
Specify at order stage:	21 - 50	516004	
Specify at order stage.	51 - 100	516004	
	up 101	516004	
Extra length connecting cable:			
5 m – non-halogen, grey – 3 x 1,0 mm²		501037	
10 m – non-halogen, grey – 3 x 1,0 mm ²		501039	
Mechanic stroke reduction S3			
w/o basic lenght shortening of housing	1	516000	
Accessories for front / rear suspension			
B16ST Eyebolt Ø8 mm, galvanized	1	100044	
B16VA Eyebold Ø8 mm, stainless steel	1	100144	
B27ST Clevis M8x16 mm, galvanized, thread M8x45 mm	1	105510	
B28ST Clevis M10x20 mm, galvanized, thread M10x50 mm	1	105520	
Microprocessor programming S3			
Motion monitored run / sequence control	1	524181	
Microprocessor programming S12			
Electronic stroke reduction 24V S12		524190	
Programming drives 24V / 230V S12		524180	
Optional accessories	PU/pcs.	PartNo.	
M-COM Configuration module for synchronised multi-drive systems	1	524177	

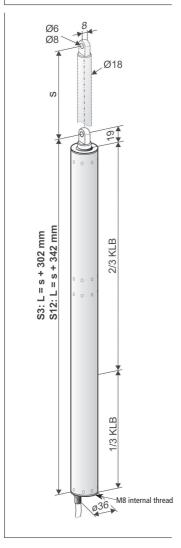


DATA SHEET PLA10 S12 24V DC

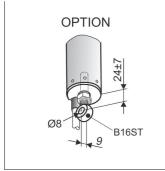


- Application: natural ventilation, SHEV, ferralux®-NSHEV
- Internal Intelligent Control Electronics S12

- Programmable synchronised run (max. 4 drives) and special functions
- M-COM for automatic synchronised run of multi drive systems and automatic sequence control with locking drives (S3 / S12)
- Spindle tube with interior thread for clevis
- Eyebolt and clevis for rear suspention



TEC	HNICAL DATA	
$U_{_{\rm N}}$	Rated voltage	24V DC (± 20%), max. 2 Vpp
I _N	Rated current	1,9 A
I_A	Cut-off current	2,5 A
P_N	Rated power	45 W
ED	Duty cycle	30 % (ON: 3 min / OFF: 7 min.)
	Protection rating	IP 65
1	Ambient temperature range	-5 °C +75 °C
F _z	Pulling force max.	1000 N
$F_{\mathtt{A}}$	Pushing force	F (N) Schub Push 1000 800 400 900 1000 1100 1200 2/3 KLB 2/3 KLB 5 (mm)
F _H	Pullout force	5000 N (fastening depended)
	Spindle tube	stainless steel
	Connecting cable	non-halogen, grey 3 x 1,0 mm 2 , \sim 3 m
V	Speed	⅓ 12,6 mm/s 12,6 mm/s
S	Stroke	100 – 1000 mm (± 5%)
L	Length	s + 342 mm (see order data)
	Sound pressure level A	≤ 70 dB (A)



ORDER DATA						
s [mm]	L [mm]	Version	Finish	PU/pcs.	PartNo.	
100	442	PLA 10 100 S12	E6/C-0	1	523610	
200	542	PLA 10 200 S12	E6/C-0	1	523620	
300	642	PLA 10 300 S12	E6/C-0	1	523630	
400	742	PLA 10 400 S12	E6/C-0	1	523640	
500	842	PLA 10 500 S12	E6/C-0	1	523650	
600	942	PLA 10 600 S12	E6/C-0	1	523660	
750	1092	PLA 10 750 S12	E6/C-0	1	523675	
1000	1342	PLA 10 1000 S12	E6/C-0	1	523700	

OPTIONS			
Special model	PU/pcs.	PartNo.	
Front Fixing			
Spindle tube with interior thread M8	1	515061	
Spindle tube end with interior thread M10	1	515060	
Drive housing painted/powder coated in other RAL colours			
Lump sum for coating		516030	
	1 - 20	516004	
Specify at order stage:	21 - 50	516004	
Specify at order stage.	51 - 100	516004	
	up 101	516004	
Extra length connecting cable:			
5 m – non-halogen, grey – 3 x 1,0 mm²		501037	
10 m – non-halogen, grey – 3 x 1,0 mm²		501039	
Mechanic stroke reduction S3			
w/o basic lenght shortening of housing	1	516000	
Accessories for front / rear suspension			
B16ST Eyebolt Ø8 mm, galvanized	1	100044	
B16VA Eyebold Ø8 mm, stainless steel	1	100144	
B27ST Clevis M8x16 mm, galvanized, thread M8x45 mm	1	105510	
B28ST Clevis M10x20 mm, galvanized, thread M10x50 mm	1	105520	
Microprocessor programming S12			
Electronic stroke reduction 24V S12		524190	
Programming drives 24V / 230V S12		524180	
Optional accessories	PU/pcs.	PartNo.	
M-COM Configuration module for synchronised multi-drive systems	1	524177	

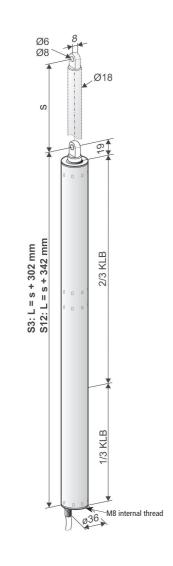


DATA SHEET PLA16 S12 24V DC

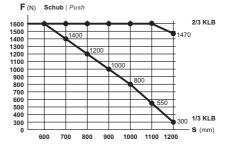


- Application: natural ventilation, SHEV, ferralux®-NSHEV
- Internal Intelligent Control Electronics S12

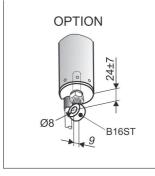
- Programmable synchronised run (max. 4 drives) and special functions
- M-COM for automatic synchronised run of multi drive systems and automatic sequence control with locking drives (S3 / S12)
- Spindle tube with interior thread for clevis
- Eyebolt and clevis for rear suspention



TEC	CHNICAL DATA	
$U_{_{\rm N}}$	Rated voltage	24V DC (± 20%), max. 2 Vpp
I _N	Rated current	1,9 A
I_A	Cut-off current	2,5 A
P_N	Rated power	45 W
ED	Duty cycle	30 % (ON: 3 min / OFF: 7 min.)
	Protection rating	IP 65
*	Ambient temperature range	-5 °C +75 °C
F _z	Pulling force max.	1600 N
F_A	Pushing force	F(N) Schub Push



F _H	Pullout force	5000 N (fastening depended)
	Spindle tube	stainless steel
	Connecting cable	non-halogen, grey 3 x 1,0 mm², ~ 3 m
V	Speed	X ₌ 7,0 mm/s ≥ 7,0 mm/s
S	Stroke	100 – 1000 mm (± 5%)
L	Length	s + 342 mm (see order data)
	Sound pressure level A	≤ 70 dB (A)



ORDER	ORDER DATA						
s [mm]	L [mm]	Version	Finish	PU/pcs.	PartNo.		
100	442	PLA16 100 S12	E6/C-0	1	565710		
200	542	PLA16 200 S12	E6/C-0	1	565720		
300	642	PLA16 300 S12	E6/C-0	1	565730		
400	742	PLA16 400 S12	E6/C-0	1	565740		
500	842	PLA16 500 S12	E6/C-0	1	565750		
600	942	PLA16 600 S12	E6/C-0	1	565760		
750	1092	PLA16 750 S12	E6/C-0	1	565775		
1000	1342	PLA16 1000 S12	E6/C-0	1	565800		

OPTIONS					
Special model	PU/pcs.	PartNo.			
Front Fixing					
Spindle tube with interior thread M8	1	515061			
Spindle tube end with interior thread M10	1	515060			
Drive housing painted/powder coated in other RAL colours					
Specify at order stage:		516030 + 516004			
Extra length connecting cable:					
5 m – non-halogen, grey – 3 x 1,0 mm²		501037			
10 m – non-halogen, grey – 3 x 1,0 mm²		501039			
Mechanic stroke reduction S3					
w/o basic lenght shortening of housing	1	516000			
Accessories for front / rear suspension					
B16ST Eyebolt Ø8 mm, galvanized	1	100044			
B16VA Eyebold Ø8 mm, stainless steel	1	100144			
B27ST Clevis M8x16 mm, galvanized, thread M8x45 mm	1	105510			
B28ST Clevis M10x20 mm, galvanized, thread M10x50 mm	1	105520			
Microprocessor programming S12					
Electronic stroke reduction 24V S12		524190			
Programming drives 24V / 230V S12		524180			
Optional accessories	PU/pcs.	PartNo.			
M-COM Configuration module for synchronised multi-drive systems	1	524177			

EXPLANATIONS ON THE PRODUCT LABEL

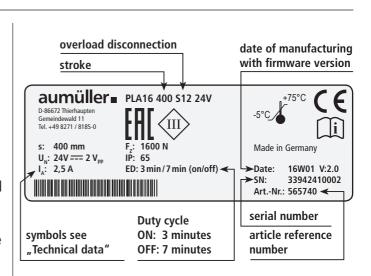
The product label provides information about:

- manufacturer,
- article reference number and name,
- technical caracteristics,
- · date of manufacturing with firmware version,
- serial number.

Nоте

Never install and operate damaged products.

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

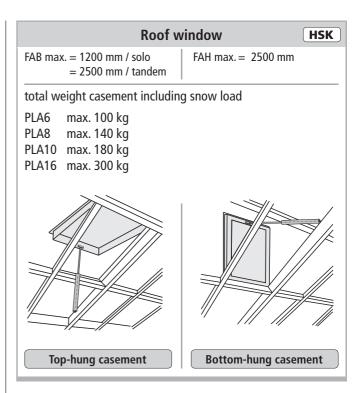


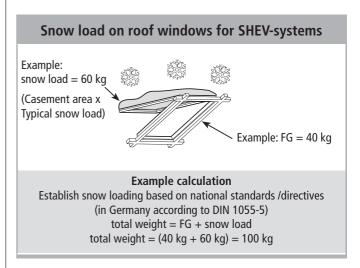
AREAS OF APPLICATION AND CASEMENT SIZES

Areas of application and casement sizes:					
Mounting of drives up to a casement size of max. 4m² (depending on the system)					
Top-hung casement and Bottom-hung casement					
inward	opening NSK				
FAB max. = 1200 mm / solo = 2500 mm / tandem	FAH max. = 2500 mm				
Top-hung casement	Bottom-hung casement				
Top-hung casement und Bottom-hung casement outward opening NSK					
FAB max. = 1200 mm / solo = 2500 mm / tandem	FAH max. = 2500 mm				

Bottom-hung casement

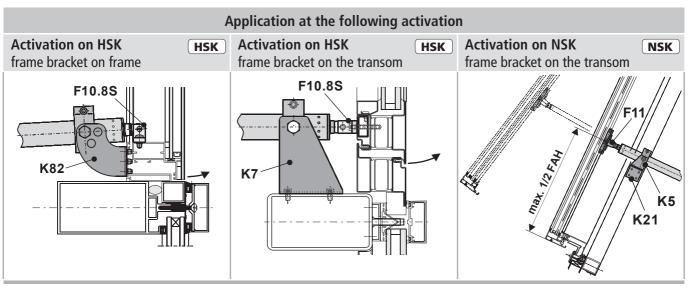
Top-hung casement





OPENING ANGLE AT DIRECT OPERATION (OUTWARD OPENING WINDOWS)

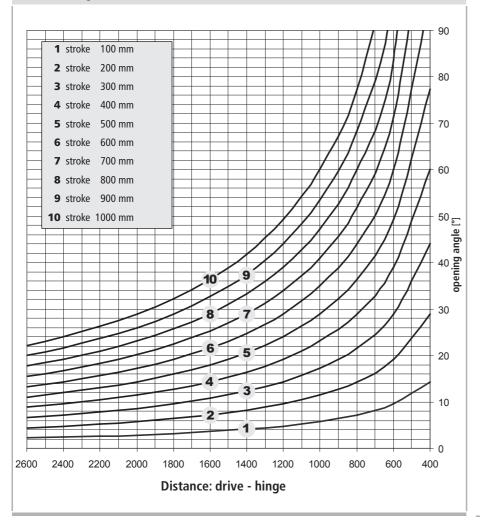


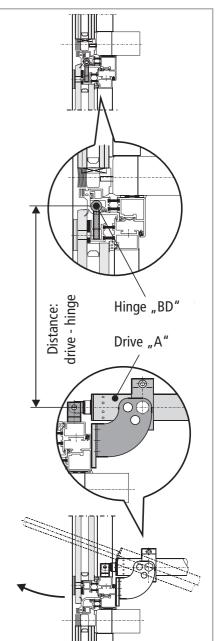


Planning the opening angle for direct operation

This planning diagram is a general guide to help establish the most appropriate drive stroke for the opening width required. The specifice installation conaitions are to be observed. The opening angle for direct operating drives on the main closing edge (HSK) or on the side closing edge (NSK) depends on:

- distance: in between hinges (BD) and activation point of drive
- stroke or the opening width at the activation point of drive
- casement height





INSTALLATION STEP 1: INSPECTION BEFORE THE INSTALLATION



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

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

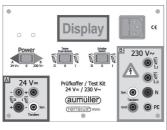
Display: drive current, battery charge

Ambient temperature: -5 °C ... + 75 °C Plastic housing: $250 \times 220 \times 210 \text{ mm}$

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 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,
- 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.

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).

Check window data on siteMeasure FAB and FAH.

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

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

$$F[N] = \frac{5.4 * G [kg] * FAH [m]}{a [m]}$$

a = Distance of action point to hinges

F = Drive force

s = Stroke







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

Scope of delivery:

Prior to assembly, check items quantity in the delivery for completeness.

Anwelsung für Montage und Inbetriebnahme Assembly and Commissioning Instructions Warning sign sticker "Risk of entrapment" (1x)

Tools required

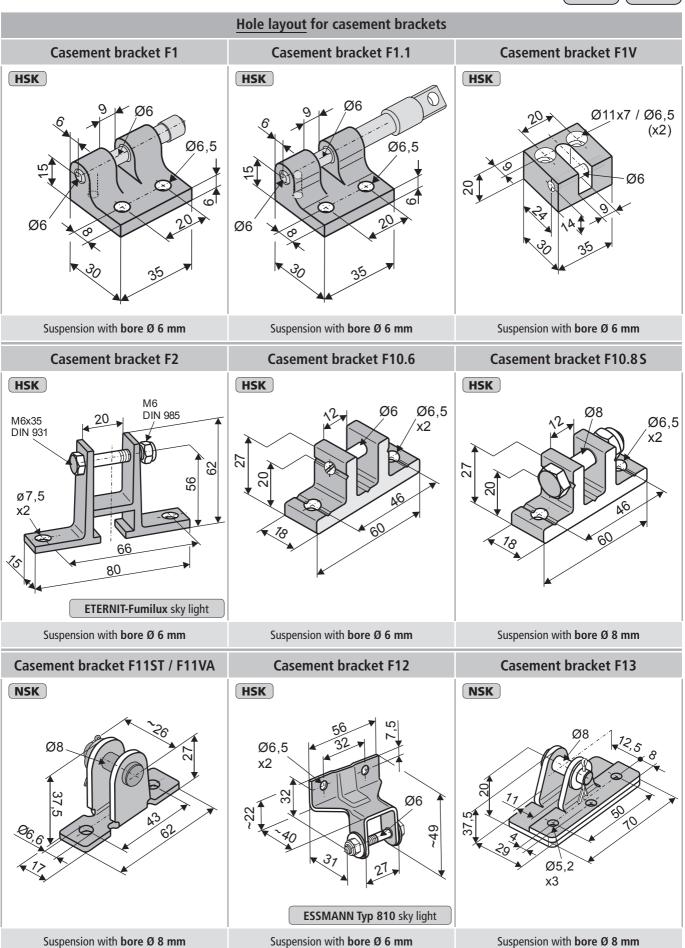
- Marker,
- Grains,
- Hammer,
- Knife,
- Screwdriver (cross, Torx),
- · Hexagonal wrench,
- Torque wrench,
- Power drill,
- Threadlock adhesive,
- possibly a tool for blind rivet nuts.

Positioning of the drives at the HSK

Positioning of the drives at the HSK One Spindle Drive Two Spindle Drive 1/2 FAB 1/2 FAB 1/2 FAB 1/4 FAB 1/2 FAB 1/4 FAB

INSTALLATION STEP 3A: DETERMINE THE CASEMENT BRACKETS



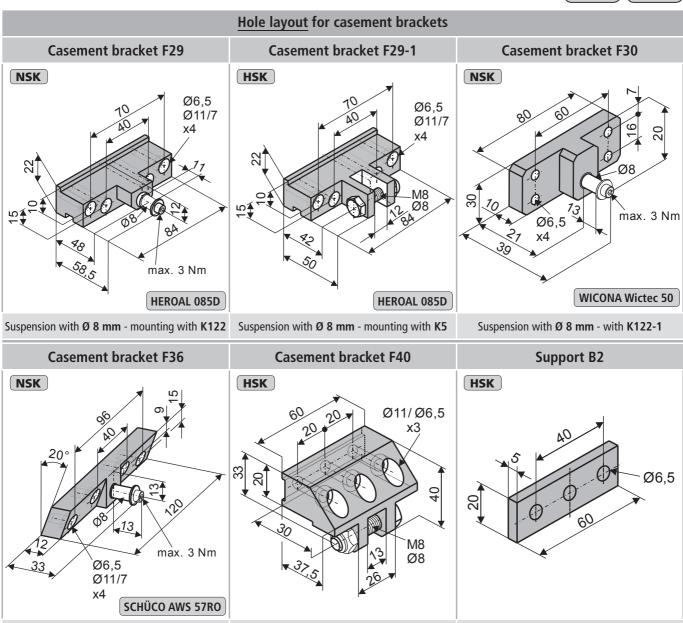


UJ

DETERMINE THE CASEMENT BRACKETS



mounting with casement bracket F 40

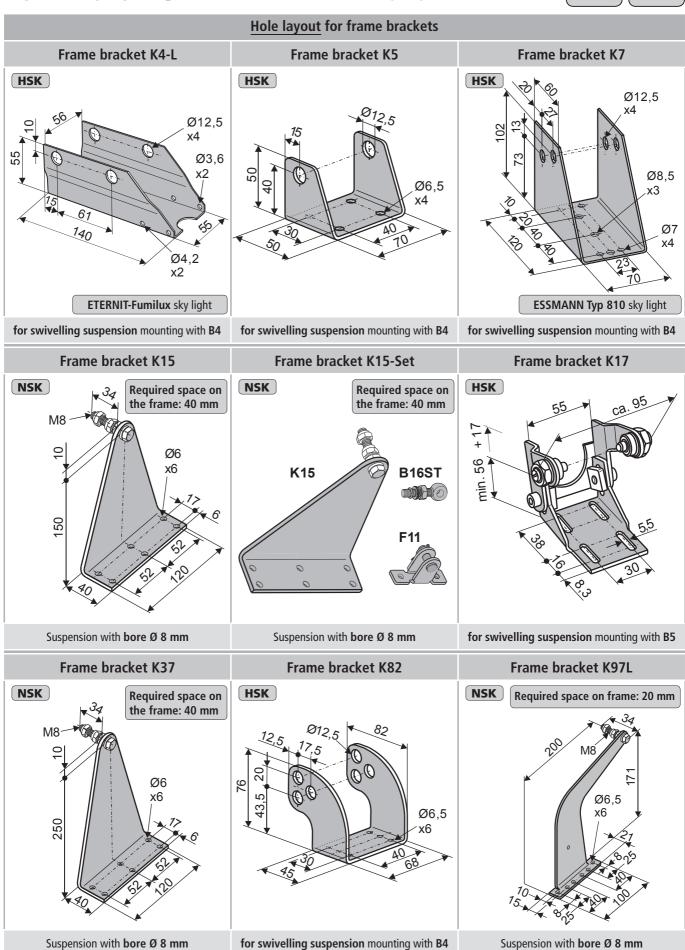


Suspension with bore Ø 8 mm

Suspension with Ø 8 mm - with K122-1

Installation Step 3B: Determine the frame brackets

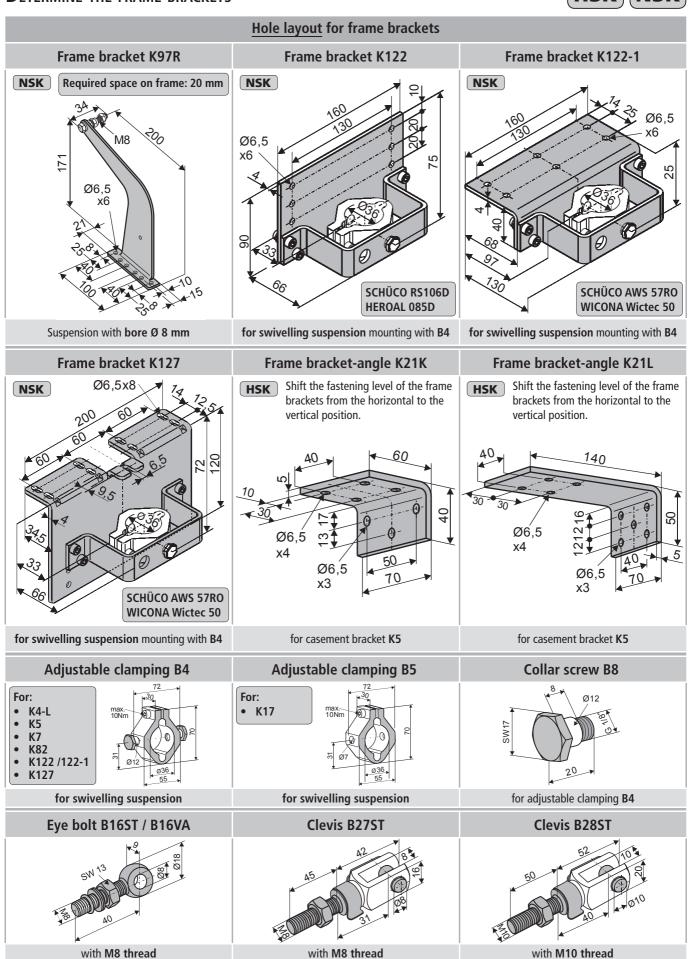




05

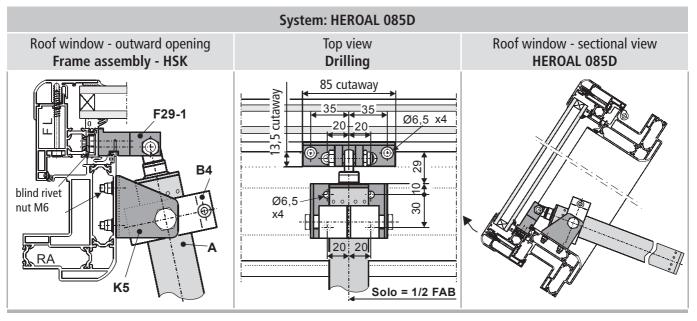
HSK NSK

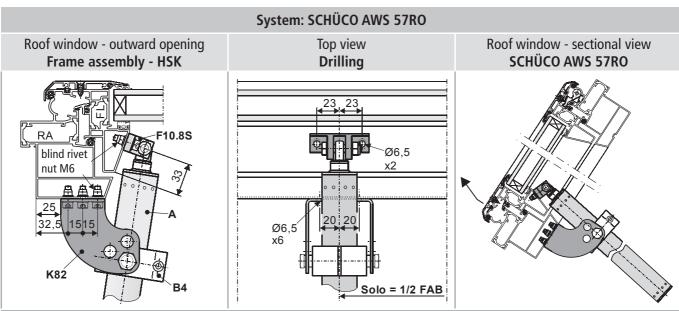
DETERMINE THE FRAME BRACKETS

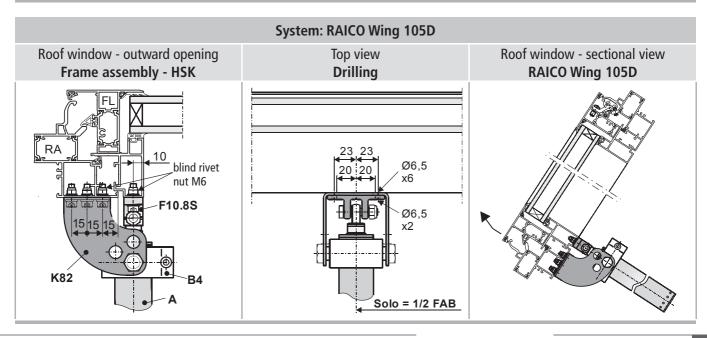


INSTALLATION STEP 4A: HOLE LAYOUT: ACTIVATION ON HSK



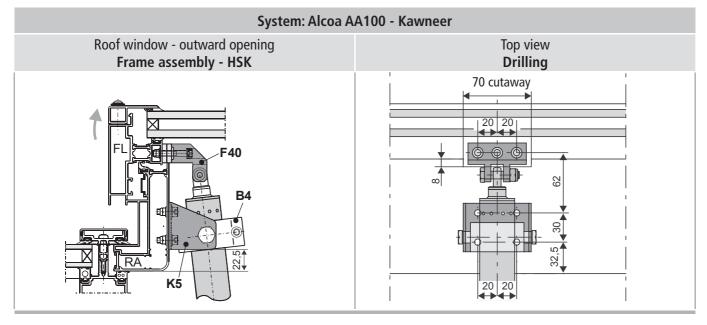


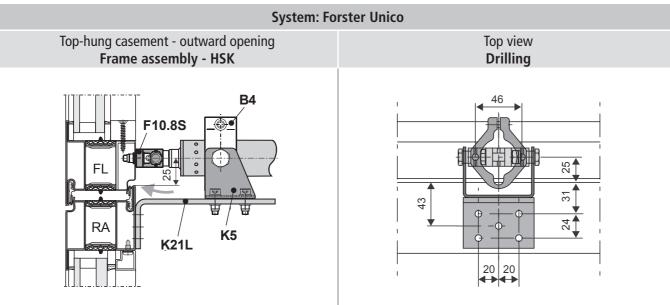


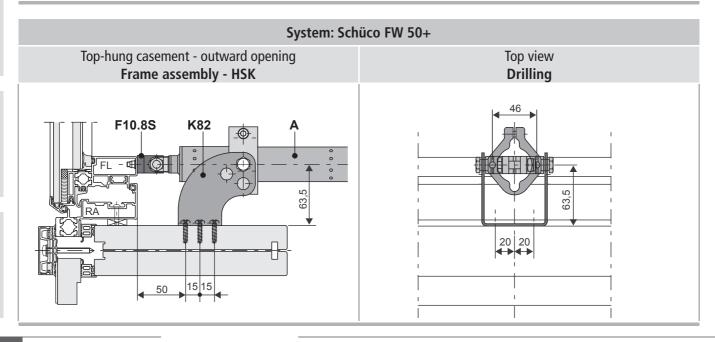


HOLE LAYOUT: ACTIVATION ON HSK



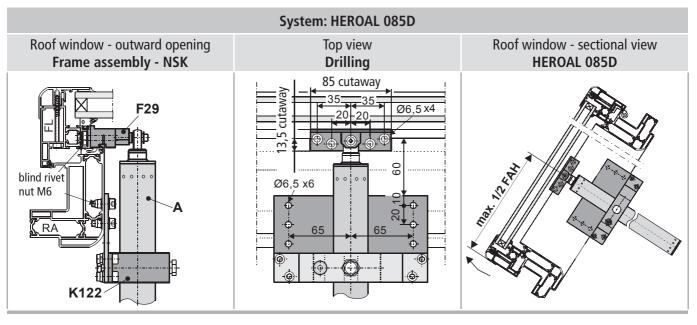


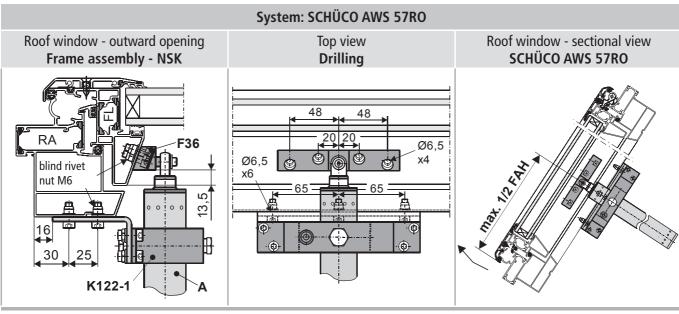


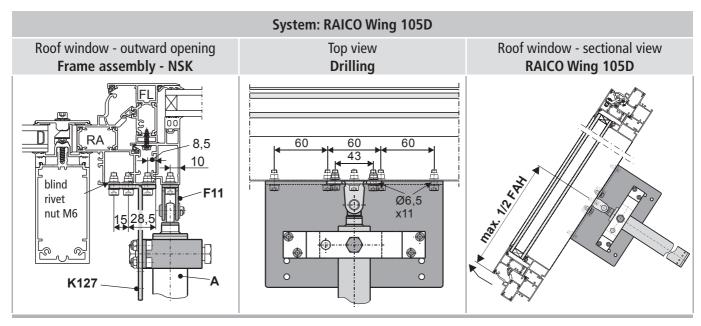


INSTALLATION STEP 4B: HOLE LAYOUT: ACTIVATION ON NSK



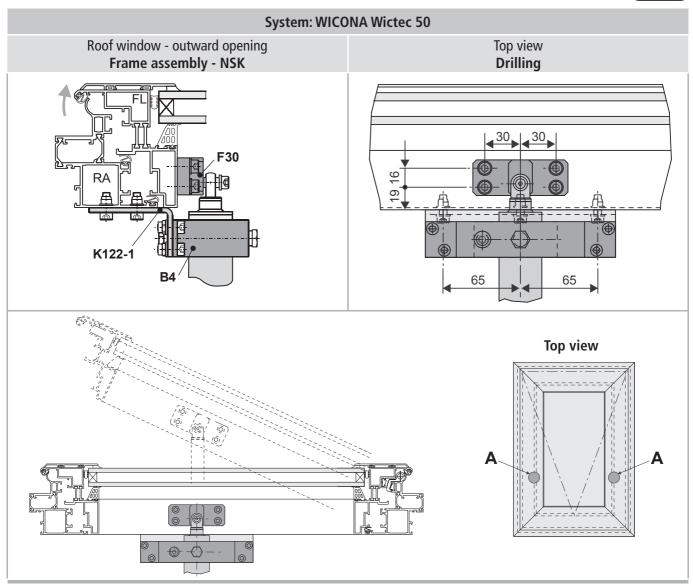






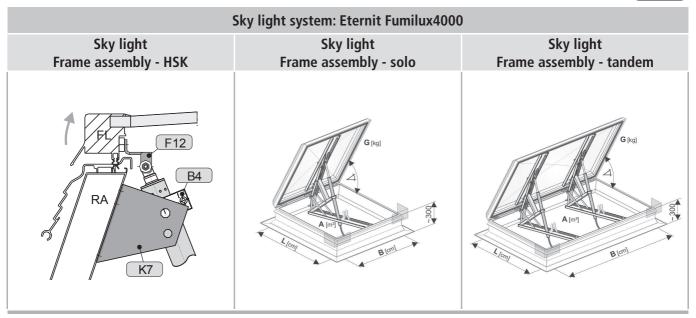
HOLE LAYOUT: ACTIVATION ON NSK





Installation STEP 4c: Sky Light





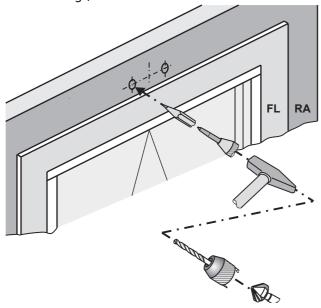
Installation step 5a:

Assembly for direct operation - activation on HSK

(OUTWARD OPENING)



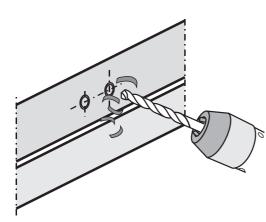
- Determine fastenings.
- Produce drill holes with appropriate cross-section. For the mounting dimensions please refer to the above-mentioned hole layout drawings (see chapter "INSTALLATIONSTEP 3 + 4") or project-specific documents and drawings).



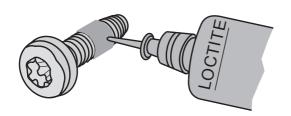


Carefully clear away drilling swarfs to prevent seals from being damaged.

Avoid surface scratches, for example by using masking tape.



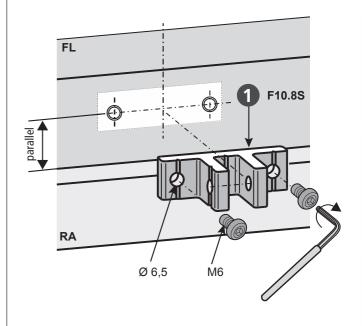
■ Secure fasteners against loosening; i. e. by applying removable thread-locking compound such as "Loctite".



■ Fit casement bracket **F10.8S ①**.



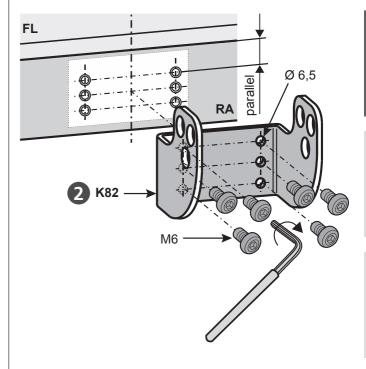
Make sure it is parallel to casement edge. "Casement bracket" center and "spindle" must be in line.



■ Fit frame bracket **K82 ②**.

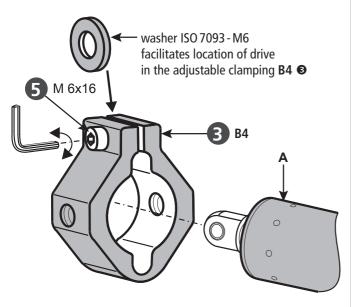


Make sure they are parallel to casement edge.



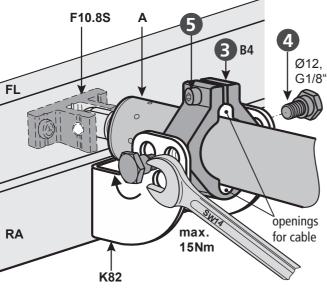
06

- Untighten the cylinder head screw M6 **⑤** from the adjustable clamping **B4 ⑥**.
- If necessary, insert washer ISO 7093 M6 and slightly re-tighten together with screw.
- Slide the adjustable clamping **B4 ⑤** gently on the body by hand (do not force).

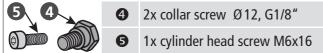


Note Washer ISO 7093 - M6 is <u>not</u> included in the scope of delivery.

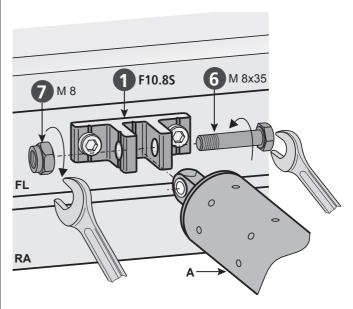
- Attach drive with adjustable clamping **B4 ⑤** to frame bracket **K82 ②**.
- Screw in the collar screw **4** and tighten to a maximum of 15 Nm.
- If necessary, pass the drive cable through the openings in the adjustable clamping **B4 ⑤**.



Equipment: Adjustable clamping B4 3

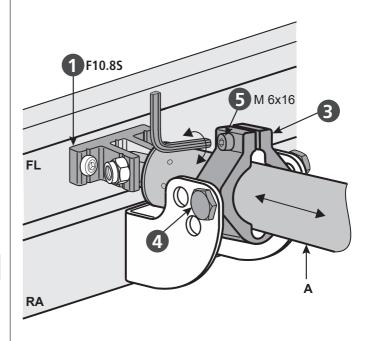


- Attach drive to casement bracket **F10.8S ①**.
- Insert screw M8x35 **⑤** and tighten with even secure nut M8 **⑥**.



Equipment: Casement bracket F10.8S 1x screw M8x35 1x even secure nut M8, with polyamide clamping part

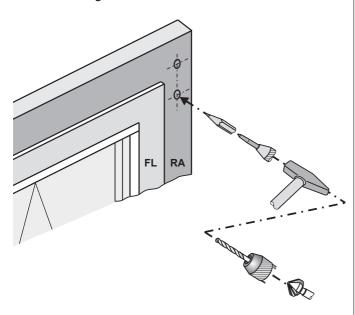
■ Adjust casement pressure. Tighten the cylinder head screw M6 ⑤ from the adjustable clamping B4 ⑥ to torque of 10 Nm.



INSTALLATION STEP 5B: ASSEMBLY FOR SIDE-CLOSING EDGE OPERATION - NSK



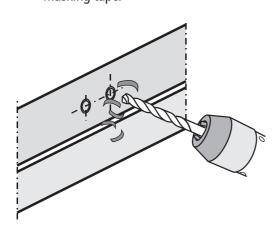
- Determine fastenings.
- Produce drill holes with appropriate cross-section. For the mounting dimensions please refer to the above-mentioned hole layout drawings (see chapter "INSTALLATIONSTEP 3 + 4") or project-specific documents and drawings).



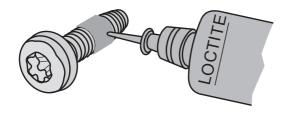


Carefully clear away drilling swarfs to prevent seals from being damaged.

Avoid surface scratches, for example by using masking tape.



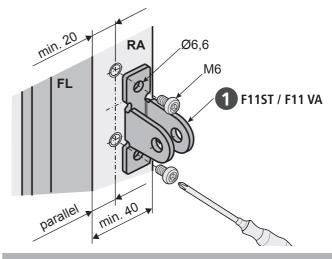
Secure fasteners against loosening; i. e. by applying removable thread-locking compound such as "Loctite".



■ Fit casement bracket F11/ST / F11VA ①.



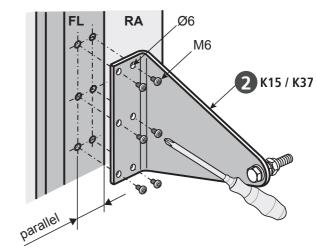
Make sure it is parallel to casement edge. "Casement bracket" center and "spindle" must be in line.

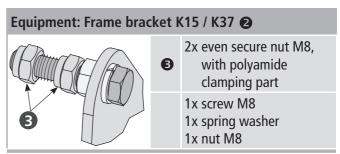


■ Fit frame bracket K15 / K37 ②.



Make sure they are parallel to casement edge.



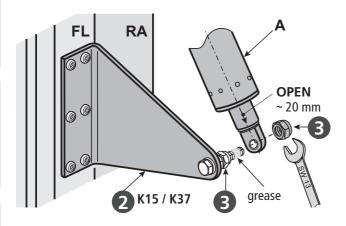


NSK

■ Attach drive to the frame bracket **K15** / **K37** ② and tighten with both even secure nut ③.

Note

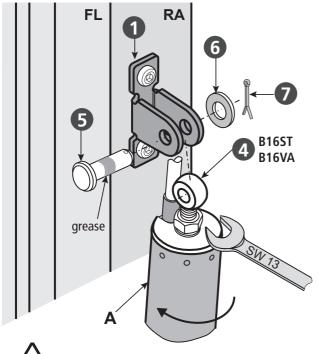
For easy mounting to frame brackets / casment brackets, move drives ~20 mm open. Operation only by using a test device and both drives at the same time.





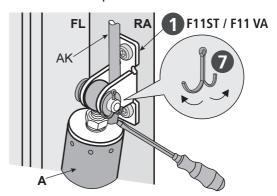
Ensure to align to the casement bracket **①**.

- Attach the drive to the casement bracket **F11ST** / **F11VA ①**. Note the cable position.
- Attach drive with bolt **⑤**.



Slowly turn the drive clockwise.

- Secure bolt **⑤** with washer **⑥** and cotter pin **②**.
- Spread out the cotter pin **②**.



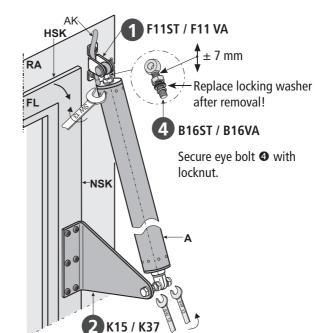
- Move drives to close the window.
- Adjust casement pressure using eyebolt **B16 4**.



Window must be fully closed.

Drive must be parallel to NSK.

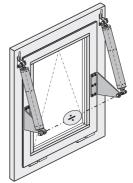
Drive should freely turn in the frame bracket.



■ To fit the second drive.



Fit both mounting bracket so that their axes are in line. Check contact pressure of casement.



INSTALLATION STEP 6: ELECTRIC CONNETCTION





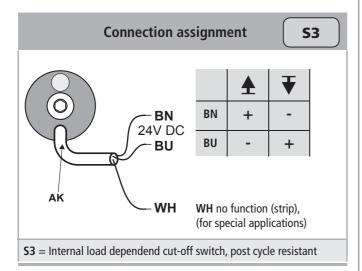
Make sure when establishing the connection that there is no voltage at the terminals! Unused wires must be safely insulated!

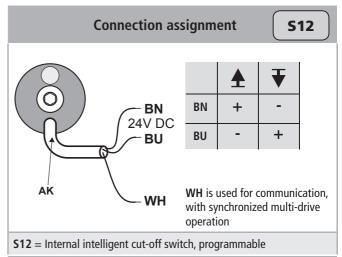
The running direction of the drive may be changed by interchanging (polarity reversal) the wires "BN – (brown)" - "BU – (blue)".

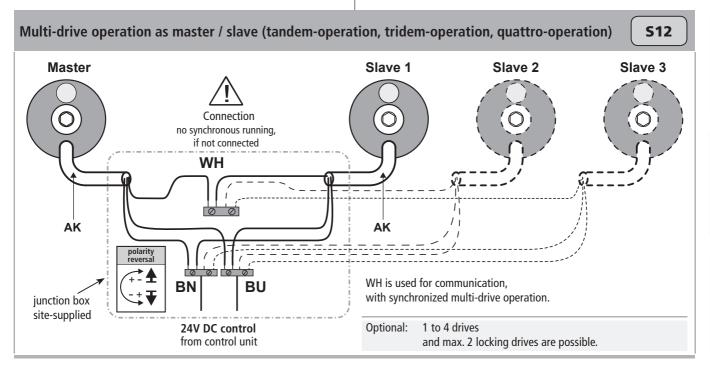


Drives must be switched by the controller to the opposite direction (pole reversed) when switched off at overload.

Wire colour coding		Direction of travel	
Colour	DIN IEC 757	OPEN 🛧	
black	BK	OI EN	
white	WH	CLOSE ▼	
brown	BN	·	
blue	BU	polarity reversal	
green / yellow	GN / YE		
green	GN	^	
violet	VT	(+- - -	
grey	GY		

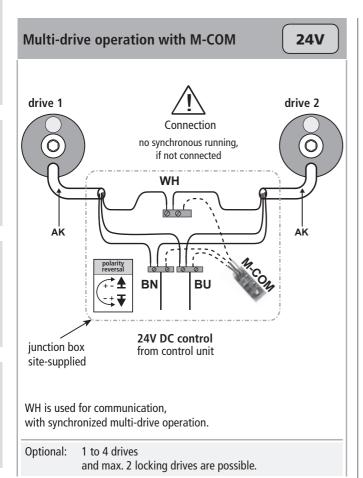


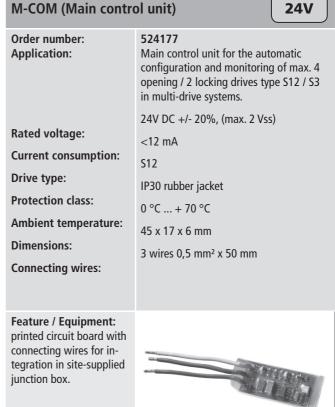




ELECTRIC CONNETCTION







Cable junction box 24V (for renewal) Order number: 513344 to extend a drive cable Application: only for low voltage Rated 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 loose ceramic terminals.

UniPC with 24V 230V configuration interface

Order number: Application:

Hard- and software for configuration of drives supplied by Aumüller Aumatic GmbH

Rated voltage.

24V DC +/-20%

Parameterizable

24V DC type S3, S12, S12 V.2 230V AC type S12, S12 V.2

drives:

software UniPC (Downloadlink*), Interface

Scope of delivery:

"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.

INSTALLATION STEP 7:

SUPPLY LINES OF DRIVES TO THE CONTROL UNIT

Observe current regulations and guidelines e.g. DIN 4102-12 regarding the "Fire behavior of building materials-circuit integrity maintenance of electric cable systems" (E30, E60, E90) and the "Specimen Guideline on Conduits German designation - MLAR", and also prescribed constructional regulations!

RECOMMENDATION

Formula to calculate

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

the required wire cross-section of a supply line $A \text{ mm}^2 = \frac{I_A \text{ (total)} * L_m \text{ (length supply line)} * 2}{2,0 \text{ (voltage drop)} * 56 \text{ m/} (\Omega^* \text{mm}^2)}$

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)

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

 $A = 1,42 \text{mm}^2 -> 1,5 \text{mm}^2 \text{ chosen}$

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 of drives.

Installation step 8: 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.

CONNECTION CABLE ROUTING

Cable channel does not stick through the ventilation holes. Cable duct glued on. Attach connection cable with cable ties.



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
Drive does not start	Duration of mains power supply too short	 Adjust supply voltage as specified in the technical documen- tation
	• 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 See possible solutions above associated with "Drive doesn't start" 	 Wait until drive has cooled down and start again See possible solutions associated with: "Drive doesn't start"

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
- 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.
- 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).
- 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.



DEMOUNTING AND DISPOSAL

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

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

Dispose of parts according to the locally applicable legal provisions.

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 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:

- 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.

Point of contact for possible warranty claims or for repair parts or accessories is the responsible branch office or the responsible person at

Firm Aumüller Aumatic GmbH.

Contact data are available at our homepage

(www.aumueller-gmbh.de)



KONFORMITÄTSERKLÄRUNG DECLARATION OF CONFORMITY

Hersteller Manufacturer

aumüller.

Aumüller Aumatic GmbH Gemeindewald 11 86672 Thierhaupten Germany

Produktart | Product type: Spindelantriebe für Fenster | Spindle drives for windows

Produktbaureihe | *Product series:* PLA 6 / 8 / 10 / 16 xxxx S12 - 24V PLA 101 / 116 xxx S12 - 24V

Ab Seriennummer | From serial number: XXXXXX-XX-XXX

Ab Datum | From date: (Year-W-Week) 16W10

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

KONFORMITÄT CONFORMITY

Richtlinie über elektromagnetische Verträglichkeit 2014/30/EU

Directive relating to Electro-Magnetic Compatibility 2014/30/EU

Niederspannungsrichtlinie 2014/35/EU Low Voltage Directive 2014/35/EU

HARMONISIERTE NORMEN HARMONIZED STANDARDS

DIN EN 60335-2-102:2016-05
DIN EN 61000-6-1:2007-10
DIN EN 61000-6-2:2006-03
DIN EN 61000-6-3:2011-09
DIN EN 61000-6-4:2011-09

SONSTIGE TECHNISCHE NORMEN UND SPEZIFIKATIONEN FURTHER TECHNICAL STANDARDS AND SPECIFICATIONS

DIN EN 12101-2:2003-09 (in ferralux® NRWG - 24 V DC) **Montageanweisung** | *Installation instructions*

Thierhaupten, 01.03.2016

K. Meinzer

Geschäftsführer / Verantwortlich für die technische Dokumentation Managing Director / Head of technical documentation



Die Sicherheitshinweise der mitgelieferten Produktdokumentation sind zu beachten! The safety instructions of the supplied product documentation are to be observed!

VdS Schadenverhütung bescheinigt die Anwendung eines



Qualitätsmanagementsystems

für



S 814040 10.10.2014 09.10.2017

Geltungsbereich des Zertifikates

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

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

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

litur Reinermann

ppa. Urban

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)

D-ZM-11149-01-01

DAkkS

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.

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.

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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

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