



HAHN Lamellen

HAHN-Louvre Windows Manual

Transport / Handling / Storage of goods
Installation / Maintenance / Repairing
Cleaning/ Operation / Safety

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1. Introduction

This manual is intended to enable you to operate the Hahn Louvre Windows safe and use all their admissible opportunities.

The use of this manual helps you to:

- Getting familiar to Louvre Windows
- Avoiding interferences due to improper use

The observance of these manual:

- Helps to avoid dangers
- Increases reliability and durability of Louvre Windows
- Reduces maintenance costs and downtime



Please read this manual carefully in advance and make it accessible to all persons involved on a suitable and appropriate place. We point out that not observing the instructions in this document may affect the warranty.

If you should not understand this manual or individual parts/chapters of it, please do not hesitate to ask us before you start with any corresponding activity.

HAHN Lamellenfenster GmbH is not liable for the safe and proper function of Louvre Windows:

- At any handling which is not according to common use

You have no warranty claims for:

- Operating errors
- Lack of maintenance
- other use of units which is not stated in this manual

Signs and symbols in this manual

The signs and symbols used in this manual will help you to use the manual and the Louvre Window quickly and safely.



Warning of a general risk

This symbol is used for tasks where multiple causes can lead to danger/risks

2. Area of application

This manual is valid for 8 listed louvre window types. Type of window can be identified by checking order- and delivery documents.

3. Application according to regulations

HAHN Louvre windows are NSHEV-units (**N**atural **S**moke and **H**eat **E**xhaust **V**entilators), furthermore suitable for day-to-day-ventilation; made from aluminium extrusions (depending on unit type either thermal- or non thermal broken) with single- or insulated glazing. Units are produced for vertical installation.

HAHN Louvre windows can be used wherever optimal ventilation, good use of daylight at best use of space is required. Due to its elegant optics HAHN Louvre windows are suitable for appealingly architectural design. Examples for use of louvre windows are façade constructions, schools, child day care centres, office buildings, winter gardens, staircases and many more.

4. Misuse of Louvre Windows

At reasonably foreseeable misuse of Louvre Windows the producers's warranty deed expires, the sole responsibility is then passed to the user.

Reasonably foreseeable misuse is:

- Holding head or extremities between opened louvre blades
- Using Louvre Window as ladder, shelf or shoring
- Jump or drop against the opened or closed Louvre Window
- Removal of safety barriers
- Not keeping the maintenance interval
- Deferred maintenance
- Deferred replacement of wear parts
- Faulty or inaccurate done maintenance or reparation

5. Remaining risks

Residual risks that, despite the measures for the integration of safety in the design, despite the safety precautions and despite the additional protection measures still remain jamming in the area of the exposed engine and in the opening areas of the lamella.

Existing residual risks are noted in the operating instructions.

Existing residual risks to be avoided by:

- Special warning notice at Louvre Windows
- Consideration of general safety instructions and warnings in this instruction

Risk of death / injury to persons on the louvre windows can be caused by:

- Misuse
- Improper Handling
- Transport
- Lack of protective devices
- Defective or damaged components

Damage to the machine may result from

- Improper Handling
- Not keeping the instructions of use and maintenance
- Unsuitable operating materials

6. Power-operated windows, minimize of risks

Depending on location of units in the building, considering the use of rooms and furthermore on control of units, a risk analysis based on the European directive on machinery has to be done proving whether further preventive action has to be taken at the Louvre Windows.

We refer to information sheet no. 3 of the „ZVEI Fachverband Sicherheitssysteme, 60596 Frankfurt/Main“

Checklist for determination of Safety class

Project

Project: _____

Street: _____

Post Code / Location: _____

State: _____

Project number: _____

Risk Analysis

Installation location E _____

Purpose of building N _____

Control S _____

Safety class _____

Notes

Client

Name: _____

Street: _____

Post Code / Location: _____

State: _____

Contact person: _____

Tel/Fax Office: _____

E-Mail: _____

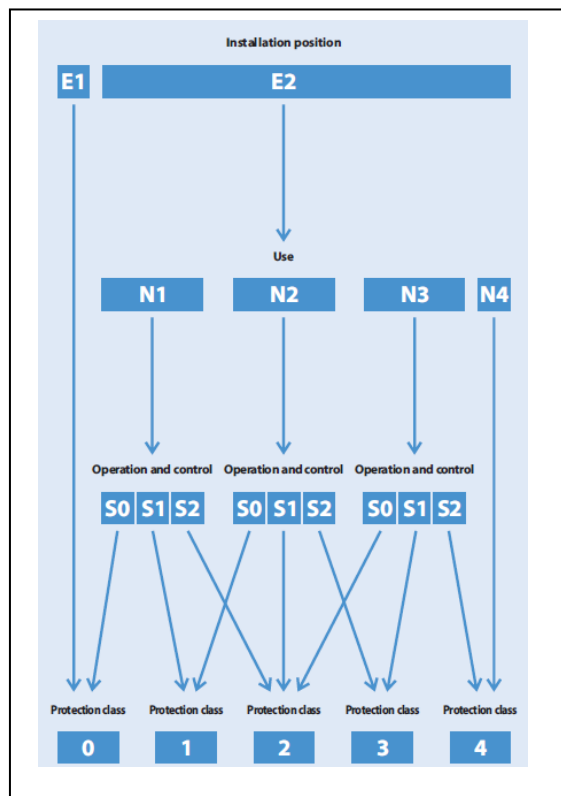
Installation details

Installation location: _____

Installation height: _____

Window name: _____

Window identification number: _____



All necessary preventive actions have been taken YES No

<p>Producer of window system</p> <p>_____</p> <p>Stamp/Date/Signature</p>	<p>Client</p> <p>_____</p> <p>Stamp/Date/Signature</p>
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Risk Analysis

Case-study installation situation	Risk classification	Risk parameters
a) Installation height of the bottom edge of the sash a minimum of 2.5 m above floor level or permanent access level b) Permanently installed devices in front of the window preventing access c) Window ledges or soffits preventing unhindered access to the window for the user	Low Risk	E1
Installation height of the bottom edge of the sash above floor level or access level below 2.5 m with clear access to the window	High Risk	E2

Type of use of the premises	Risk classification	Risk parameters
a) Commercial premises , the users of which have been instructed in the use of the technical equipment (e.g. offices, industrial premises)	Low Risk	N1
b) Residential premises , the occupants of which have been instructed in the use of the technical equipment. c) Premises in which the users/visitors are capable of gauging the risk or are supervised.	Medium Risk	N2
d) Premises intended for regular use by persons who cannot be instructed in the safe and reliable use of the technical equipment (e.g. retail outlets, places of assembly, etc.).	High Risk	N3
e) Premises intended for regular use by persons requiring protection or who are unable to reason (such as nurseries, schools and hospitals, etc.).	Very high risk	N4

Control system or method of operation	Risk classification	Risk parameters
Manual operation without lock (dead man's controller) with visual monitoring of all windows (e.g. use of a keylock switch)	Very Low Risk	S0
Manual operation with lock with visual monitoring of all windows	Low Risk	S1
Automatic operation (e.g. wind and rain based control system, building management system equipment) or manual operation without visual contact with all windows	High Risk	S2

Classification of protective measures

Classification	Examples of protective measures
Protection class 0	No protective measures required
Protection class 1	Warning signs
Protection class 2	Access safeguards in the form of constructional measures or Rounded, padded edges; closing forces of 80 to 150 N, no shearing effect or Acoustic warning signals or Warning lamps or EMERGENCY OFF switch on the window or Moveable devices in front of the window to prevent access
Protection class 3	Dead man's controller without higher level central control system or Movement stops 25 mm before the end position over 10 s; tripped by an optical or acoustic signal; further movement with signal up to the end position or Slow window sash movement of max. 5 mm/s or Access width less than 8 mm or Rounded, padded edges; low closing forces of less than 80 N, no shearing effect
Protection class 4	Safeguard in the form of contact-based protection devices, e.g. contact strips, contact sensors or Safeguard in the form of electro-sensitive protective equipment, e.g. light barriers, light grilles or Dead man's controller with authorized operation for each window without higher level central control (e.g. keylock switch) or Access width less than 4 mm or Access safeguards in the form of constructional measures

7. Preventive action

Preventive and protective action to avoid squeezing or other injuries:

- Louvre Windows are installed higher than 2.5 mtr
- Windows to be opened and closed from instructed persons only
- Install safeguards to avoid people getting direct access to the units
- Louvre Windows can be equipped with sensors which can prevent inadvertently closing of units
- If any errors are noted, do not try to fix them by yourself but inform a qualified contractor
- Safety gloves have to be worn for glazing of S9 units to avoid cutting injuries
- Before the Louvre Window is put into operation, it must be examined to see if there are any external damages
- It has to be checked again by an electrician if incoming power and motor voltage are identically

8. Operating instructions

HAHN Louvre Windows have movable blades. The side mounted, horizontally rotating blades are to be operated by hand or by motor power. The following instructions must be observed:

- The operation may only be done by instructed persons
- It must be ensured that a quarter rotation of the blades about the central axis is possible.
The turning and closing range of louvre window is permanently kept free of any obstructions and objects
- Louvre Windows are not suitable to hang on any objects.
They should not be used as a stepladder or for supporting the body weight
- After breaking the window glass must not be used or moved. The splitter must be carefully removed.
It is to point out the potential dangers and to take necessary measures in acute danger.
A professional company should be consulted as soon as possible.
- Permanent movement cycles must be avoided to prevent thermal and mechanical overload of the motor
- At mechanical actuation by hand lever, make sure that it moves only in the plane of rotation.
If resistance or stiffness is felt, the opening or closing operation must be stopped
- At any malfunction on the Louvre window HAHN Lamellenfenster GmbH must be informed immediately.
When trying to repair the damage himself, the warranty can be omitted and there is a risk to injury such as bruises, electrical shock ...

9. Product description

HAHN Louvre Windows are made of high quality materials and are designed for longevity. All windows will be tested and adjusted in the factory according to the customer specification, matching the required regulations (according to DIN EN 14351-1, DIN EN 12101-2; RC2 or others like ball protection) depending on their purpose. They are 100% functionally tested and are ready for use.

The single glazed louvre window types NACO and S9 are – unless otherwise agreed – delivered unglazed with glass coming in separate crates. Information about individual window details (according to EN 14351-1 air permeability, water tightness, wind resistance, heat and sound insulation etc. or acc. DIN EN 12101-2 (standard for natural smoke and heat exhaust ventilators)) is provided in a separate document accompanying the delivery.

9.1 Area calculation acc. to §3.4 of standard NF S 61937-8: 2010

Geometric surface and free surface (S9 / S9-iV-05 / S9-iVt-05 / S9-iVt-05 GG)

Geometric surface:

The geometric surface is the surface free by the vent on the frame.

$$SGO \text{ (in dm}^2\text{)} = Wpa \times Hpa / 10000$$

Wpa = width of passage of air (on the frame), side parallel to axis of rotation of slats (expressed in mm)

Hpa = height of passage of air (on the frame), side perpendicular to axis of rotation of slats (expressed in mm)

Free surface

In accordance with §3.4 of standard NF S 61937-8: 2010, the free surface of the vent corresponds to the actual surface area for the passage of air, which may be less than or equal to the geometric surface area of opening, taking into account any obstructions, provided that the vent opening angle is at least 60° for swinging or pivoting vents.

For vent types S9-iV-05 / S9-iVt-05 and S9-iVt-05 GG with single or double rows of blades (single vent and double breasted vent), the equation is as follows:

$$FS \text{ (dm}^2\text{)} = [(Hpa \times \sin(\alpha) - N \times th) \times Wpa] / 10000$$

For vents of type S9, with single row of blades (single vent), the equation is as follows:

$$FS \text{ (dm}^2\text{)} = [Hpa \times Wpa \times \sin(\alpha) - [(Wpa - 40) \times th + 1000] \times N] / 10000$$

For vents of type S9, with double row of blades (double-breasted vent), the equation is as follows:

$$FS \text{ (dm}^2\text{)} = [Hpa \times Wpa \times \sin(\alpha) - [(Wpa - 80) \times th + 2000] \times N] / 10000$$

Where:

- th is the total thickness in mm of a blade (including the surrounding framework)
- N is the number of blades
- α is the angle of opening of the blades with respect to the vertical axis
- Wpa is the width of the passage of air (on the frame), side parallel to axis of rotation of blades (expressed in mm)
- Hpa is the height of the passage of air (on the frame), side perpendicular to axis of rotation of blades (expressed in mm)

Geometric surface and free surface (Tairmo)

Geometric surface:

The geometric surface is the surface free by the vent on the frame.

$$\text{SGO (in dm}^2\text{)} = W_{pa} \times H_{pa} / 10000$$

W_{pa} = width of passage of air (on the frame), side parallel to axis of rotation of slats (expressed in mm)

H_{pa} = height of passage of air (on the frame), side perpendicular to axis of rotation of slats (expressed in mm)

Free surface

In accordance with §3.4 of standard NF S 61937-8: 2010, the free surface of the vent corresponds to the actual surface area for the passage of air, which may be less than or equal to the geometric surface area of opening, taking into account any obstructions, provided that the vent opening angle is at least 60° for swinging or pivoting vents.

$$\text{FS (dm}^2\text{)} = [(H_{pa} \times \sin(\alpha) - N \times th) \times W_{pa}] / 10000$$

Where:

- th is the total thickness in mm of a blade (including the surrounding framework)
- N is the number of blades
- α is the angle of opening of the blades with respect to the vertical axis
- W_{pa} is the width of the passage of air (on the frame), side parallel to axis of rotation of blades (expressed in mm)
- H_{pa} is the height of the passage of air (on the frame), side perpendicular to axis of rotation of blades (expressed in mm)

10. Functional principle

Hahn Louvre windows have moveable blades. The side mounted blades with centric pivot, horizontally rotating louvres can be moved either manually or by electrical actuators. Synchronous synchronization is achieved by internal linkage mechanisms which give direct transmission of force to the pivot bearings.

11. Window types / characteristics / identification

Use the following photos and product characteristics for easy identification of vent types.



Tairmo

Characteristics

Insulated glass, thermal broken, aluminium framed louvre blades,
Frame depth 66mm



Tairmo-Allglass

Characteristics

Insulated glass, thermal broken, flush glazed look outside,
Frame depth 66mm



S9-iVt-05

Characteristics

Insulated glass, thermal broken, aluminium framed louvre blades,
Frame depth 47mm



S9-iVt-05 Allglass

Characteristics

Insulated glass, thermal broken, flush glazed look outside,
Frame depth 47 or 50,4mm



Integral

Characteristics

Insulated glass, thermal broken, actuator invisible integrated into frame, aluminium framed louvre blades,
Frame depth 80mm



S9-IV

Characteristics

Insulated glass, non thermal broken, aluminium framed louvre blades,
Frame depth 46mm



S9

Characteristics

Single glazed, non thermal broken, overlapping glass blades
Frame depth 46mm



S9-45°

Characteristics

Single glazed, side glass fixing clips, non thermal broken, flush glazed
Frame depth 47mm



System naco

Characteristics

Single glazed, non thermal broken, overlapping blades,
Frame depth 46mm, Glass height 152mm

12. Product attributes / dimensions / materials

	Tairmo	Tairmo-Allglass	S9-ivt-05	S9-ivt-05 Allglass	Integral
Window frame	AL-Profiles thermal broken	AL-Profiles thermal broken	AL-Profiles thermal broken	AL-Profiles thermal broken	AL-Profiles thermal broken
Louvre blade frame	AL-Profiles thermal broken	AL-Profiles thermal broken	AL-Profiles thermal broken	AL-Profiles thermal broken	AL-Profiles thermal broken
Width of unit (min./max.)	250 mm / 2500 mm	250 mm / 2500 mm	250 mm / 2000 mm	250 mm / 1600 mm	250 mm / 1800 mm
Height of unit (min./ max.)	260 mm / unlimited	288 mm / unlimited	200 mm / unlimited	250 mm / unlimited	520 mm / unlimited
Louvre blade height (min./ max.)	180 mm / 400 mm	200 mm / 400 mm	150 mm / 350 mm	200 mm / 350 mm	150 mm / 350 mm
Min. Number of blades	1no	1no	1no	1no	2no (Vent height 520 mm)
Frame depth	66 mm	66 mm	46,8 mm	46,8 mm (at 4mm glass) 50,4 mm (at 6 mm glass)	80,0 mm
Louvre blade pivot	centric (off-centre at request)	centric (off-centre at request)	centric (off-centre at request)	centric (off-centre at request)	centric (off-centre at request)
Max. Opening angle => depending on actuator	90°	90°	84°	84°	83°
Brickwall, wooden and steel constr. => Fixing through frame or fixing brackets	✓	✓	✓	46,8mm Frame => ✓ 50,4mm Frame => No	✓
Glazing flange => Facade construction	✓	✓	✓	✓	✓
Glazing	Insulated glass (triple)	Insulated glass (triple)	Insulated glass (double/triple)	Insulated glass (double/triple)	Insulated glass (double/triple)
Glass thickness	40 mm	52 mm	28 mm / 32mm	32 / 34 mm	28 mm
Standard glass construction => Statics need to be considered	6 / 12 / 4 / 12 / 6 4 / 14 / 4 / 14 / 4	6 (toughened) / 16 / 6 / 16 / 8	6 / 16 / 6 6 / 20 / 6	4 (toughened) / 20 / 8 6 (toughened) / 20 / 8	6 / 16 / 6
Further available glass types => Statics need to be considered	Float, toughened, laminated, heat strengthened	Float, toughened, laminated, heat strengthened	Float, toughened, laminated, heat strengthened	Float, toughened, laminated, heat strengthened	Float, toughened, laminated, heat strengthened
Alternative panel/filling options	Insulated panels	glass facade panel	Insulated panels	Insulated panels	Insulated panels
Surface	anodised / powder coated	anodised / powder coated	anodised / powder coated	anodised / powder coated	anodised / powder coated
Louvre Window controls / Overview					
Naco Hand lever	-	-	-	-	-
Aluminium hand lever (GEZE OL 90)	-	-	✓	✓	-
Aluminium hand lever OL320	✓	✓	✓	✓	✓
Crank gear & Operation rod	✓	✓	✓	✓	-
HAAH crank gear / integrated	-	-	✓	✓	-
Ring eyelet & hook operator	-	-	-	-	-
LAH 61 (24V) / LAH 61K (230V)	✓	✓	✓	✓	-
LA 35 / 85 / 105 (24V) LA 35 / 85 / 105 K (230V)	✓	✓	✓	✓	-
LA 85 (24V) / LA 81K (230V)	✓	✓	✓	✓	-
LA 105 (24V) / LA 105K (230V)	✓	✓	✓	✓	-
HLA 165 (24V)	✓	✓	✓	✓	-
Elero Picolo 0	✓	✓	✓	✓	-
Ventic (24V) Ventic ACI 22 (230V)	-	-	✓	✓	-
ESCO FA 121 (R) / 24V od. 230V	✓ Min. 3 Louvres	✓ Min. 3 Louvres	✓ Min. 3 Louvres	✓ Min. 3 Louvres	-
LDH 800/070 (24V)	-	-	-	-	✓
Pneumatic control PUDV40/12-165-GK8x32-BSA2	✓	✓	✓	✓	-

CE-Certifications acc. To DIN EN 14351-1 / Window values / Classifications					
Air permeability EN 1028 Test norm / EN 12207 Certification norm	Class 4	Class 3	Class 3	Class 3	Class 3
Watertightness EN 1027 Test norm / EN 12208 Certification norm	Class 6A (tight up to 250Pa)	Class 7A (tight up to 300Pa)	Class 4A (tight up to 150Pa)	Class 4A (tight up to 150Pa)	Class 3A (tight up to 100Pa)
Resistance against wind load EN 12211 Test norm EN 12210 Certification norm	C5 (2000Pa/ L/300) B5 (2000Pa/ L/200)	C5 (1600Pa/ L/300) B5 (1600Pa/ L/200)	C3 (1200Pa / L/300) B4 (1600Pa / L/200)	C2 (800Pa / L/300) B3 (1200Pa / L/200)	C2 (800Pa / L/300) B3 (1200Pa / L/300) A4 (1600Pa / L/150)
Sound insulation EN ISO 140-3 Test norm EN 14351-1 App. B Diagram calculation EN ISO 717-1 Certification norm	Rw = 40 (-1; -4; 0; -4) at 8mm Laminated NF/ 10 / 4 / 10 / 6 (Test window area: 1,875m ² Note correction value!)	npd	Rw = 38 (0;-2) at 8mm Laminated NF / 12 / 8 (Test window area.: 1,82m ² Note correction value!)	npd	npd
Insulation / Uw-value Calculation acc. to EN ISO 10077-1	see performance data sheet	see performance data sheet	see performance data sheet	see performance data sheet	see performance data sheet
g-Value glass EN 410	see performance data sheet	see performance data sheet	see performance data sheet	see performance data sheet	see performance data sheet
Light transmission value glass EN 410	see performance data sheet	see performance data sheet	see performance data sheet	see performance data sheet	see performance data sheet
Security resistance class ENV 1628, ENV 1629, ENV 1630 Test norm ENV 1627 Certification norm	✓	npd	✓	npd	npd
Ball protection DIN 18032-3; 1997-4 (does not belong to EN 14351-1)	certified	npd	certified	certified	certified
Anti-fall protection TRAV 2003	certified	npd	certified	npd	npd
CE certification NSHEV acc. DIN EN 12101-2 Natural Smoke and Heat Exhaust Ventilators					
Aerodynamic effective area (EN 12101-2, App B)	0,56	0,56	0,56	0,54	0,54
Stability under wind load (EN 12101-2, App F)	WL 5000	WL 5000	WL 3000	WL 2000	WL 2200
Heat and fire performance EN 12101-2, App G	B300-E	B300-E	B300-E	B300-E	B300-E
Operational liability EN 12101-2, App C	Re 1000 (=10.000 double stroke test)	Re 1000 (=10.000 double stroke test)	Re 1000 (=10.000 double stroke test)	Re 1000 (=10.000 double stroke test)	Re 1000 (=10.000 double stroke test)
Operational liability at outer load EN 12101-2, App D	SL 0 (=without snow load)	SL 0 (=without snow load)	SL 0 (=without snow load)	SL 0 (=without snow load)	SL 0 (=without snow load)
Operational liability at low temperature EN 12101-2, App E	T (-20)	T (-20)	T (-25)	T (00)	T (00)

	S9-iv	S9	S9-45°	System naco
Window frame	AL-Profiles, non thermal broken	AL-Profiles, non thermal broken	AL-Profiles thermal broken	AL-Profiles, non thermal broken
Louvre blade frame	AL-Profiles, non thermal broken	Frameless	Frameless	Frameless
Width of unit (min./max.)	250 mm / 1800 mm	250 mm / 1600 mm	250 mm / 1600 mm	200 mm / 1180 mm
Height of unit (min./max.)	200 mm / unlimited	200 mm / unlimited	225 mm / unlimited	191 mm / unlimited
Louvre blade height (min. / max.)	150 mm / 350 mm	150 mm / 300 mm	180 mm / 300 mm	152 mm / 152 mm
Min. Number of blades	1no	1no	1no	1no
Frame depth	46,0 mm	46,0 mm	46,8 mm	46,0 mm
Louvre blade pivot	centric (off-centre at request)	centric (off-centre at request)	centric	centric
Max. Opening angle => depending on actuator	84°	84°	84°	105°
Brickwall, wooden and steel constr. => Fixing through frame or fixing brackets	✓	✓	✓	✓
Glazing flange => Facade construction	✓	✓	✓	✓
Glazing	Insulated glass (double)	Single glass	Single glass	Single glass
Glass thickness	24 mm	8 , 10, 12 mm	8, 10, 12 mm	6 mm
Standard glass construction => Statics need to be considered	4 / 16 / 4	-	-	-
Further available glass types => Statics need to be considered	Float, toughened, laminated, heat strengthened	Toughened, laminated	Toughened, laminated	Float, toughened
Alternative panel/filling options	Insulated panels	Wood, Aluminium, Dibond...	Wood, Aluminium, Dibond...	Wood, Aluminium, Dibond...
Surface	anodised/ powder coated	anodised / powder coated	anodised / powder coated	anodised vapour galvanized, laqued

	S9-iV	S9	S9-45°	System naco
Louvre Window controls / Overview				
Naco Hand lever	-	-	-	✓
Aluminium hand lever (GEZE OL 90)	✓	✓	✓	-
Aluminium hand lever OL320	✓	✓	✓	-
Crank gear & Operation rod	✓	✓	✓	✓
HAHN crank gear / integrated	✓	✓	✓	-
Ring egelet & hook operator	-	-	-	✓
LAH 61 (24V) / LAH 61K (230V)	✓	✓	✓	-
LA 35 / 85 / 105 (24V) LA 35 / 85 / 105 K (230V)	✓	✓	✓	✓
LA 85 (24V) / LA 81K (230V)	✓	✓	✓	✓
LA 105 (24V) / LA 105K (230V)	✓	✓	✓	✓
HLA 165 (24V)	✓	✓	✓	✓
Elero Picolo 0	✓	✓	✓	-
Yentic (24V) Yentic ACI 22 (230V)	✓	✓	✓	-
ESCO FA 121 (R) / 24V od. 230V	✓ Min. 3 Louvres	✓ Min. 3 Louvres	✓ Min. 3 Louvres	-
LDH 800/070 (24V)	-	-	-	-
Pneumatic control PUDY40/12-165-GK8x32-BSA2	✓	✓	✓	✓
CE-Certifications acc. To DIN EN 14351-1 / Window values / Classifications				
Air permeability EN 1026 Test norm / EN 12207 Certification norm	Class 2	Class 2	Class 2	npd
Watertightness EN 1027 Test norm / EN 12208 Certification norm	Class 3A (tight up to 100Pa)	Class 3A (tight up to 100Pa)	Class 1A (tight without pressure)	npd
Resistance against wind load EN 12211 Test norm EN 12210 Certification norm	C1 (400Pa / L300) B2 (800Pa / L/200)	C2 (800Pa / L/300) B3 (1200Pa / L/300) A4 (1600Pa / L/150)	B4 (1600Pa / L/200) A5 (2000Pa / L/150)	npd
Sound insulation EN ISO 140-3 Test norm EN 14351-1 App. B Diagram calculation EN ISO 717-1 Certification norm	npd	npd	Rw = 26 (0,-1) at 12mm Laminated (0,76 PVB) (Test window area: 1,82m² => Note correction value!)	npd
Insulation / Uw-value Calculation acc. to EN ISO 10077-1	see performance data sheet	npd	npd	npd
g-value glass EN 410	see performance data sheet	see performance data sheet	see performance data sheet	see performance data sheet
Light transmission value glass EN 410	see performance data sheet	see performance data sheet	see performance data sheet	see performance data sheet
Security resistance class ENV 1628, ENV 1629, ENV 1630 Test norm ENV 1627 Certification norm	npd	npd	npd	npd
Ball protection DIN 18032-3: 1997-4 (does not belong to EN 14351-1)	npd	npd	npd	npd
Anti-fall protection TRAV 2003	npd	npd	npd	npd
CE certification NSHEV acc. DIN EN 12101-2 Natural Smoke and Heat Exhaust Ventilators				
Aerodynamic effective area (EN 12101-2, App B)	0,59	0,65		
Fensterbedingungen	Lamellenh.: 150 bis 400 Elementbr.: 250 bis: 2000 Doppelement: ok Max. Lamellengew.: 12kg Glas- Seitenverh. max.: 1:10	Lamellenh.: 150 bis 400 Elementbr.: 250 bis: 1800 Doppelement: ok Max. Lamellengew.: 12kg Glas- Seitenverh. max.: 1:10		
Stability under wind load (EN 12101-2, App F)	WL 2200	WL 2600		
Heat and fire performance EN 12101-2, App G	B300-E	B300-E		
Mögliche Antriebstoppen (Dimensionierung beachten!)	HLA 165 (24V) LAH 61 (24/230V) ESCO FA 121 Pneum.zyl. PUDV 40/12-165	HLA 165 (24V) LAH 61 (24/230V) ESCO FA 121 Pneum.zyl. PUDV 40/12-165	npd	npd
Operational liability EN 12101-2, App C	Re 1000 (=10.000 double stroke test)	Re 1000 (=10.000 double stroke test)		
Operational liability at outer load EN 12101-2, App D	SL 0 (=without snow load)	SL 0 (=without snow load)		
Operational liability at low temperature EN 12101-2, App E	T (-25)	T (-25)		

13. Advice for choice of glass

Depending on purpose of units and statically requirements HAHN Louvre Windows are either glazed with float, toughened, laminated or a combination of these glasses. Toughened glass is a single pane safety glass with increased thermal shock resistance and nominal bending strength. When pane gets broken, it results in a close meshed net out of small glass parts contrary to broken standard float glass which gives razor-sharp splinter and glass fragments. We recommend using heat soak tested toughened glass to avoid spontaneous breaking of glass due to inclusion of nickel sulfide. We hereby point out that use of non heat soak tested toughened glass is allowed in Germany but only at premises when installation high is less than 4 mtrs and when it can be ensured that no persons can step underneath the window.

Laminated safety glass does consist of two or more layers of glass, full-faced connected by pressure and heat with an elastic, tearproof synthetic sheet to prevent glass getting broken uncontrolled. Furthermore laminated glass gives some remaining lift capacity when broken.

14. NSHEV (Natural Smoke and Heat Exhaust Ventilators)

Preventive fire protection belongs to the most important items on planning of buildings. It serves to protect live and health. This risk can be handled by controlled removal of smoke out of the building, especially at floors and staircases used as escape routes.

HAHN Louvre Windows are suitable ideally for this purpose due to the high flow efficiency, short opening times, big opening areas and in addition due to the fact that no escape routes get blocked by any window frames.

HAHN Louvre Window types S9, S9-iV, S9-iVt-05, S9-iVt-05 Allglass, Integral Tairmo and Tairmo-Allglass are certified according to DIN EN 12101-2 for use as natural smoke and heat exhaust ventilator. Please mention with your enquiry/order when NSHEV units are required.

15. Control types

There are two options for operation of HAHN Louvre Windows:

- Manual operation by hand lever, window winder, hook operator, crank gear in direct or extended control
- Power operated via electric actuator (24V or 230V) or pneumatic control

A data sheet will be provided separately with power operated actuators. When actuators are provided by clients, a data sheet will have to be provided from the producer of actuators as well. Any risks will be stated there. As most actuators do not have finger trapping protection the danger of squeezing fingers or other body parts is very high. In the following all actuators from the HAHN Lamellenfenster GmbH product range are stated.

Valid for all actuators: Danger of finger trapping / -squeezing in area of actuator (except of LAH 65 and LDH 800) as well as on the louvre blades itself.

Beikirch M9	Technical values/information see data sheet
Belimo Spring return actuator	Technical values/information see data sheet
D+H LA_ZA	Technical values/information see data sheet
ESCO FA 121 R	Technical values/information see data sheet
D+H LAH 61/65	Technical values/information see data sheet
Pneumatic control	Double-acting cylinder PUDV40/12-165-GK8x32-BSA2
D+H Ventic	Technical values/information see data sheet
Elero Picolo 0	Technical values/information see data sheet
D+H LAH 65	Technical values/information see data sheet (finger trapping protection)
LDH 800	Technical values/information see data sheet (finger trapping protection)

Supplied windows are equipped with ready assembled and tested actuators.

- Special HAHN Louvre Window actuators, LAH 65 and LDH 800, have been developed for infinite electrical operation with integrated finger trapping protection. These actuators are particularly characterised by low running noise, high efficiency and long life. By a PC bus interface details like opening angle, cut-off forces and speed of actuators can be adjusted object-specific. To reduce risk and danger of squeezing, travel speed in closing direction and closing force in easily accessible areas.
- Information to performance of electrical actuators, power supply, power consumption and wiring can be found in the data sheet for this actuator.

Data sheets can be downloaded at www.hahn-lamellenfenster.de

16. Receipt of goods / Preparations for installation

16.1 Unloading and interim storage

The supplied HAHN Louvre Windows are packed vertically into wooden transport crates. These crates have to be off-loaded by suitable means, for instance by a fork lift with sufficient support to match weight of units. Transport crates need to be brought down carefully to ground level. Transport crates should never be stacked. Where packing cases are left on site there is the danger of condensate water entering the actuators which needs to be avoided at all costs.



16.2 Transport damages

The next step is to check for any damages. If there is any damage or loss this needs to be reported immediately to the transport company.

For damage that is observed only once the units have been unpacked:

1. Keep the consignment as it was when it arrived
2. Inform HAHN Lamellenfenster GmbH immediately in writing preferably including photos about the type and volume of the damage

The damage note has to be sent to HAHN Lamellenfenster GmbH at latest:

- Within 24 hours when delivered by parcel service or post
- Within 24 hours when delivered by railway
- Within 7 days when delivered by haulage company

Where the goods have been sent by post, the damage has to be reported to the local Post Office.

For damages observed only once the goods have been unpacked, please report damage to your Post Office providing them the damaged goods as well as the packing material.

16.3 Unpacking of goods

In order to unpack the HAHN Louvre Windows in a safe way, it is necessary to place packing pieces underneath so that the transport crate leans slightly backwards. The packing crate then can be opened, but please check labels on crate first (see below). Packing materials have to be disposed in accordance with local regulations.



16.4 Disposal / Dangerous substances

Packaging material, detergent and used or remaining lubricants have to be recycled according to the local regulations for environmental protection.

The protection of natural resources is one of the most important duties. Correct disposal avoids negative effects to persons and environment and ensures recycling of useful raw materials.

At production of HAHN Louvre Windows stainless steel, aluminium, silicone, TPE, EPDM PA 66 (thermal barrier) and glass are used. These materials do not contain any toxins, they are no contaminated materials. Disposal should be in accordance with requirements of the destination.

Lubricants

Lubricants will have to be disposed depending on their specification and the valid local regulations.

Materials (Metal, Plastic)

Materials have to be correctly sorted for proper disposal. Clean material from any adherent foreign materials. Dispose material according to the valid local regulations.

Electric components

The electrical/electronic components are not subject to the WEEE directive 2002/96/EG and their respective regional laws (in Germany eg ElektroG). The electrical / electronic components have to be disposed directly to a specialised recycling company.

16.5 Handling on site

When windows have to be moved on site, louvres must be closed. The windows can be stored either on their ends or on their sides. It has to be avoided that the right angle construction of the ventilator gets disturbed by placing any force on it as this could lead to mechanical failure or breakage of glass. Windows should never be placed on their corners or taken apart!

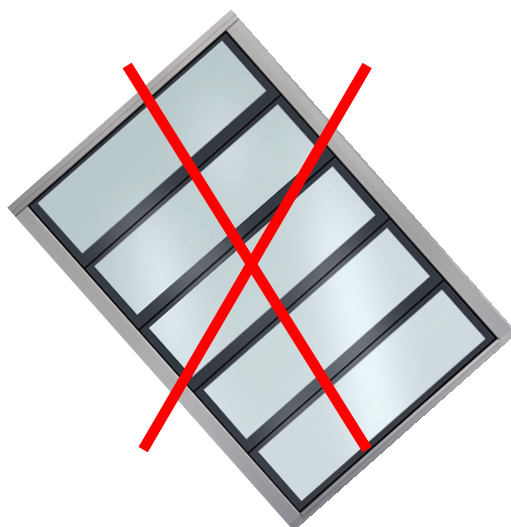
Handling of units with
louvres closed only!



Transport vertically or horizontally only!



Do not place or transport on the corner!



Do not take apart!



17.0 Installation



Units should be fixed according to the following instructions by qualified personnel so as to avoid any damage through incorrect installation. Motor types LAH 65 and LAH 65 K may only be uninstalled once you have checked with HAHN Lamellenfenster GmbH.

17.1 Correct support

Before the window is actually installed into the opening, it is necessary to check that it will fit in, that is to say there is sufficient clearance around the ventilator so that the window can function and keep weather out in a correct manner.

The Louvre Window has to be exactly positioned and packing pieces have to be set. Packing pieces have to be placed on the most important and correct places as shown on drawings A and B. Pads need to be placed right underneath the vertical profiles and not in the middle in order to avoid these profiles bending, which would result in one of the louvres not being able to open. Drawing C shows the necessary positioning of packing pieces for double breasted units.



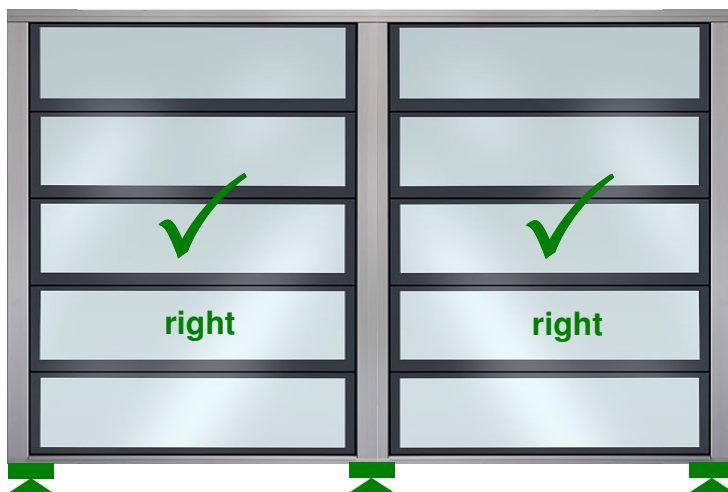
Drawing A



Drawing B



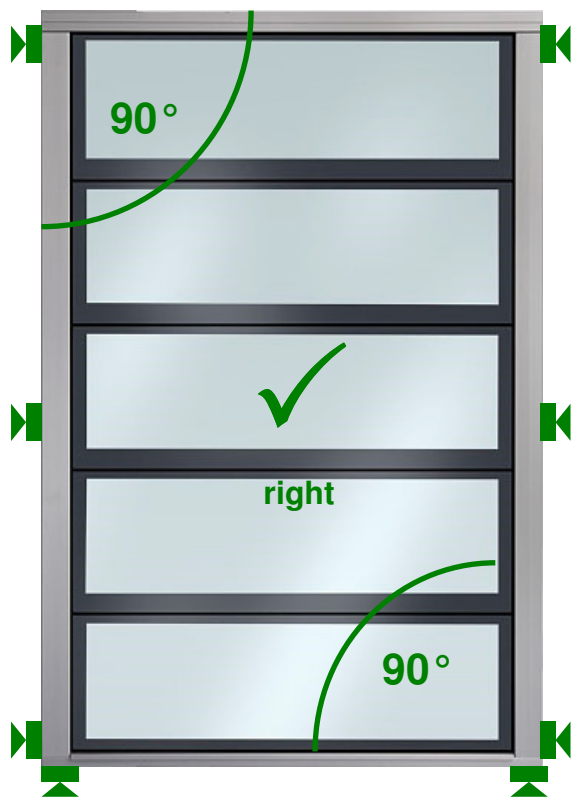
Drawing C



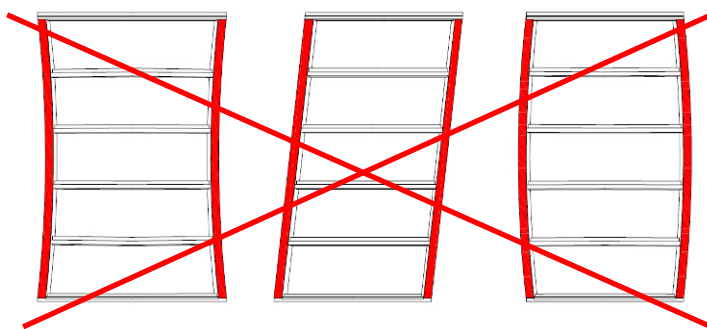
17.2 Alignment



It is necessary to align the window horizontally and vertically accurately to achieve correct function and tightness. The Louvre Window frames must be exactly parallel to each other. This is achieved by side mounted packing pieces. Once the unit has been fixed provisionally it is necessary to check the angles and make sure vent is perpendicular to all sides.



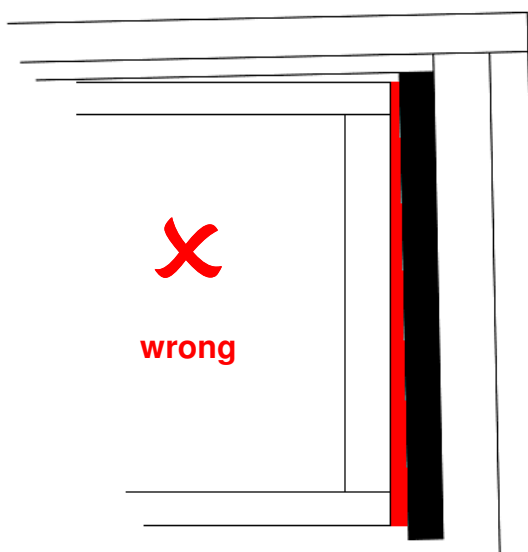
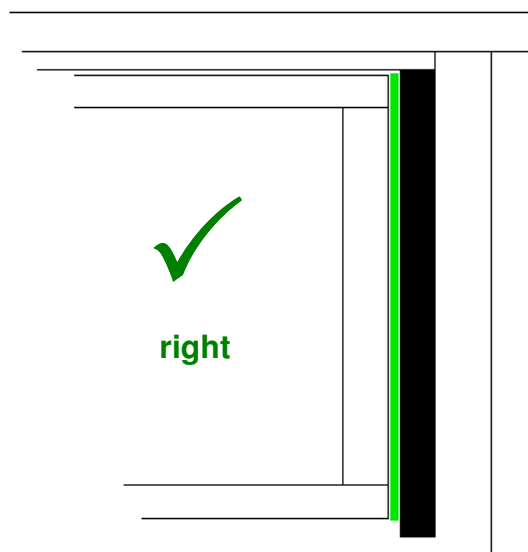
Drawing A



wrong

After installation, support and alignment of units the white distance shims will have to be removed so you can open the unit.

Inaccurate installation can be seen at different gaps between louvre and vertical brush sealing of side frame (Drawing B). The individual louvres ought to be able to move about in the horizontal plane 1-2 mm when open. Widths and heights of this gap need to be the same for every part of the unit.



Drawing B

17.3 Fixation of HAHN Lamellenfenster GmbH Louvre Windows

17.3.1 Fixation by screwing through window frame

Only use boreholes in from HAHN Lamellenfenster GmbH already made into the side frame profile (drawing below)

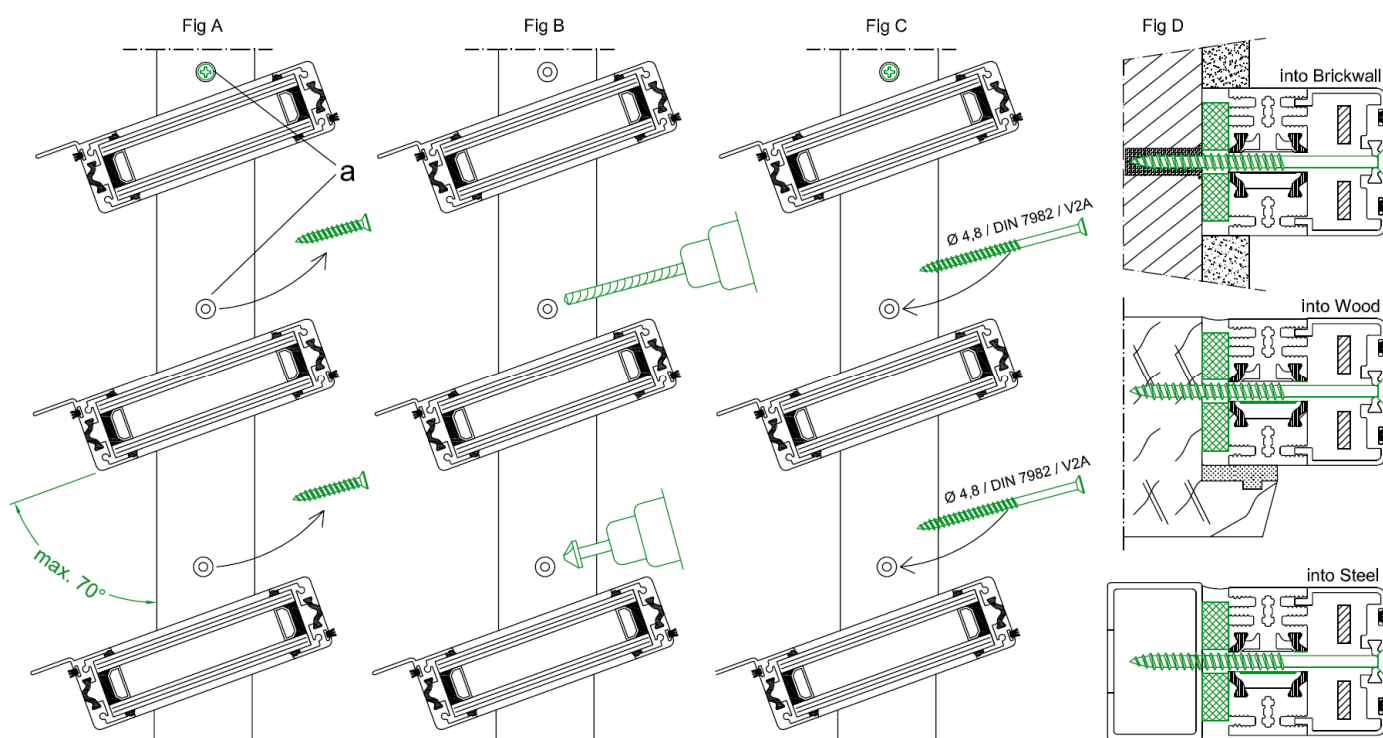
Method of fixing:

- Point of origin: HAHN Louvre Window is installed, packing pieces are fitted and window is secured
 - Open the unit to a maximum of 70° (this avoids linkage mechanism being damaged).
- Note: Actuator types LAH 65 and LAH 65K may only be removed once HAHN Lamellenfenster GmbH has approved this



- Remove screws (Fig. A) :
 - at installation into wooden construction: All screws
 - at installation into steel / brickwall: up to 250 mm Louvre height: Every 2nd screw
from 250 mm Louvre height: All screws

- Drill through window frame (Ø5 mm impact dowel). Do spot-drill substructure only (Caution: Pay attention to diameter of screw and use correct boring head size)
- Make core drill hole for Ø 4.8 mm countersunk screw into substructure (Fig. B)
- At fixation into brick wall HAHN Louvre Window has to be removed again or tend slightly out of opening
- Enlarge countersink holes into inner side frame suitable to anchor
- Drill countersink screw Ø 4.8 mm into window frame, but do not yet tighten screw
- Pad all screwed joints between Louvre Window and construction pressure-resistant to avoid bending of frame
- Tighten screws



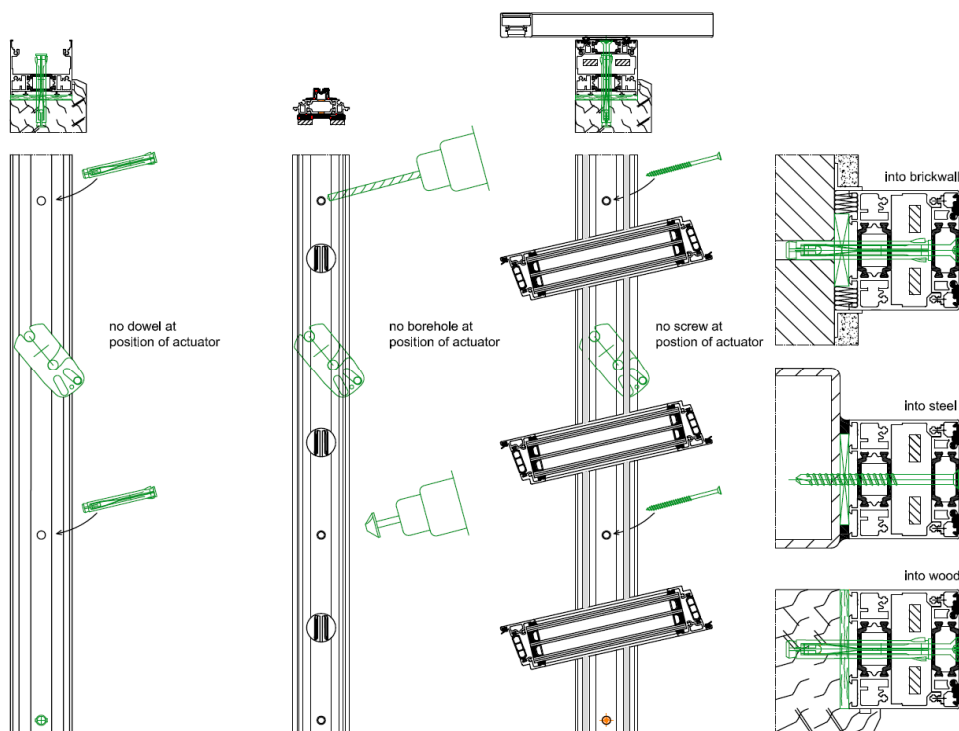
Example shown at S9-iVt-05

Fixation through vent frame especially for Tairmo/Tairmo-Allglass

Use only the already existing boreholes (prepared by HAHN Lamellenfenster GmbH) inside the linkage profiles.

Method of fixing:

- Point of origin: HAHN Louvre Window is installed, packing pieces are fitted and window is secured
- Open the unit to a maximum of 45° (this avoids linkage mechanism being damaged).
Note: Actuator types LAH 65 and LAH 65K may only be removed once HAHN Lamellenfenster GmbH has approved this
- Drill through window frame (⊙ 10 mm impact dowel).
At frame dowel: Do spot-drill substructure only (Caution: Pay attention to diameter of screw and use correct boring head size)
At impact dowel: Make tapping drill hole for 10 mm dowel into construction
- At frame dowel: When fixing into brickwall opening, window has to be removed or bended slightly from opening to install dowels
- At impact dowel: Insert and fix directly
- Enlarge borehole in linkage profile suitable for screw head size (screw fitting to dowel)
- Insert screw but do not yet tighten
- Pad all screw connections between window and wall pressure-resistant
(this is necessary to avoid window frame does bend)
- Tighten screws



17.3.2 Fixation by using fixing brackets

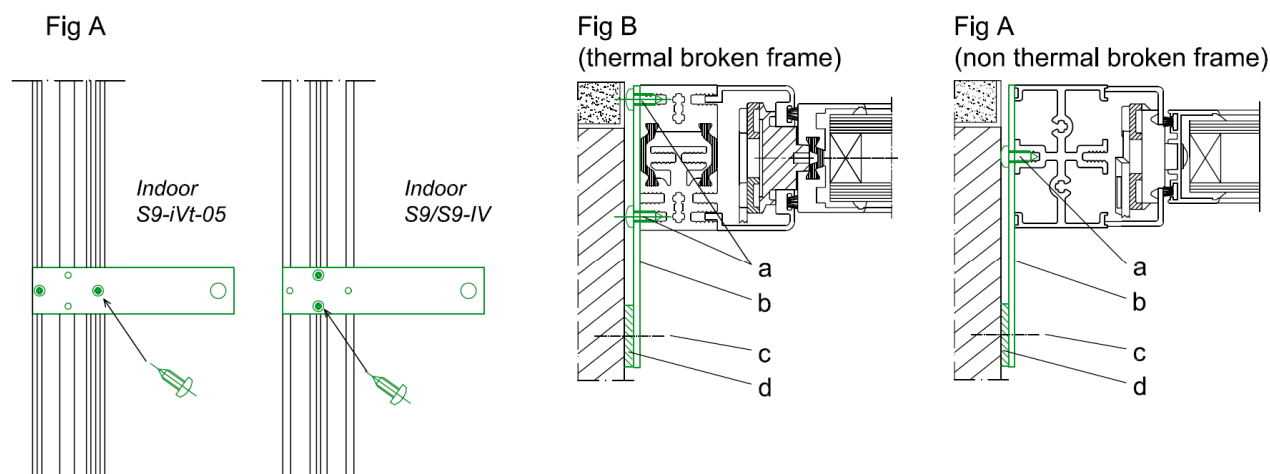
This type of fixing is used when fixing to brickwork. Plates are intended to be attached to the vertical frames with a spacing of 40-70 cm, depending on wind load.

Preparation of fixing:

- Turn fixing brackets over through 90° (Fig A) and secure with second screw
- Have rawplug ready (not included into the delivery by HAHN Lamellenfenster GmbH)
(Choice of rawplug has to be made during the planning process and depends on building situation, type of wall, wind loads etc. – necessary clearance between ventilator frame and opening depends again on the size of rawplug)

Method of fixing:

- Point of origin: HAHN Louvre Window is installed, packing pieces are fitted and window is secured
- Drill through borehole of fixing bracket into the wall
- Fix rawplug according to manufacturer's information
- Pad fixing bracket underneath rawplug position (Fig B and C)
- Tighten rawplug



Example shown at S9-iVt-05 (Fig A & B), S9-IV (Fig C)

Legend:

- a.) 2x Lens head screw each bracket $\text{Ø}4,2$ (V2A)
- b.) Bracket 30x2x130 standard dimensions / V2A
- c.) Rawplug (not included into the delivery by HAHN Lamellenfenster GmbH)
- d.) Pad (not included into the delivery by HAHN Lamellenfenster GmbH)

Fixation by brackets especially on Tairmo/Tairmo-Allglass units

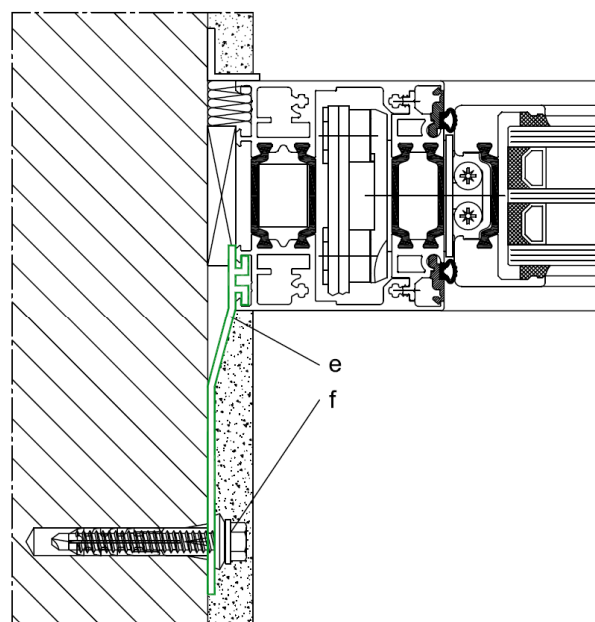
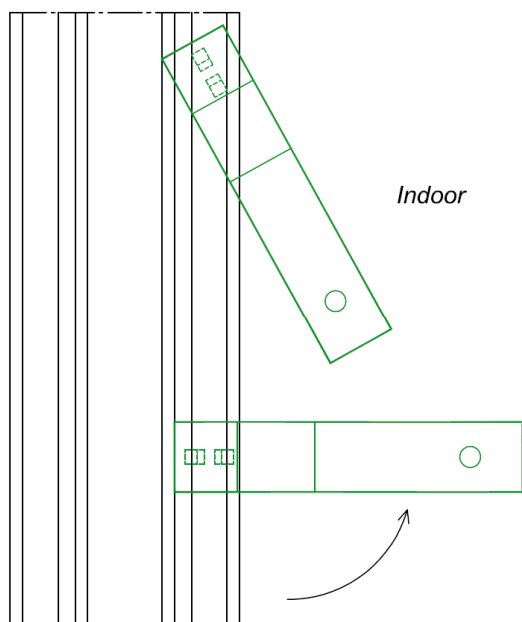
This type of fixation is primarily chosen at brickwall opening constructions (unless agreed otherwise with order). Brackets have to be fixed to vertical frame profiles at a distance of 40-70 cm (depending on local wind loads)

Preparation of fixing:

- Pull out screw-in anchor and turn by 90°
 - Have fixing plugs ready (not included in delivery)
- (Selection of fixing plug type has to be done in advance at planning of installation. Plug type is depending on the type of wall – concrete / brick wall etc.) and the amount of load stress due to wind.
- The required wall distance is again dependent on type and size of fixing plug

Method of fixing:

- Point of origin: HAHN Louvre Window is installed, packing pieces are fitted and window is secured
- Drill trough large hole of bracket into the wall
- Install fixing plug according to the manufacturer's instructions
- Pad screw-in anchor on area of fixing plug
- Tighten anchor



Legend:

- e.) Screw-in anchor
- f.) Fixing plug (not included in delivery)

17.3.3 Fixation into glazing flange

All HAHN Louvre Windows can be provided with glazing flange for installation into facade construction. Nearly all sizes are available (needs to be defined with order and clarified in advance.)

Necessary preparation before installation / fixation of units

Compare glazing flange thickness of construction with glazing flange thickness of façade construction. If sizes should not match each other, gaskets in suitable size will have to be exchanged at façade construction (please contact the façade construction system provider).

Alternatively the glazing flange thickness on HAHN Louvre Window frames can be amended on site – assuming that the window has been ordered and supplied with Frame type 2 with integrated glazing flange system. By removing or exchanging glazing rubbers in different sizes all glazing flange thicknesses from 24-40 mm are available in steps of 2 mm each: 24, 26, 28, 30, 32, 34, 36, 38 and 40mm.

Fig A

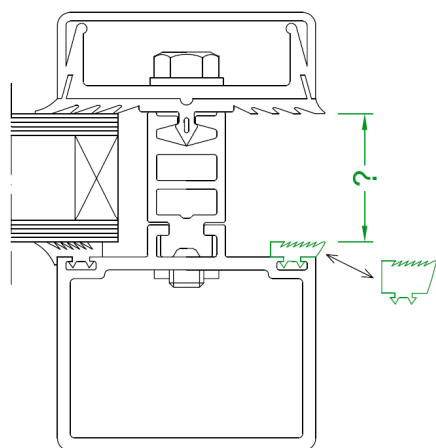
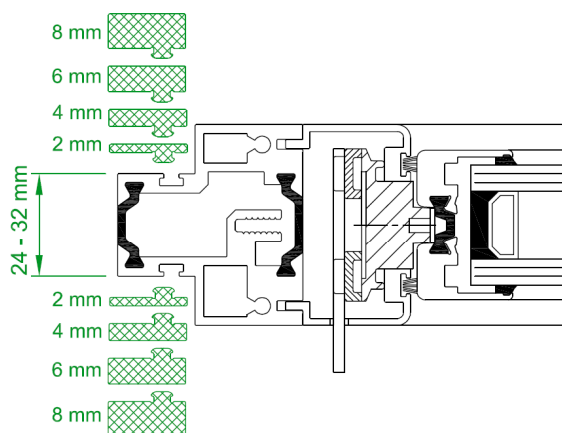


Fig B



Order of installation:

Point of origin: HAHN Louvre Window is installed, packing pieces are fitted and window is secured

Temporary fixation: If covering bar can not be mounted directly, a temporary fixation is necessary.

Depending on the façade construction system it is possible to do this fixation either according to Fig. C1 or C2 below (in case of doubt please ask the façade construction system producer)

Fig C1 (thermal broken glazing flange)

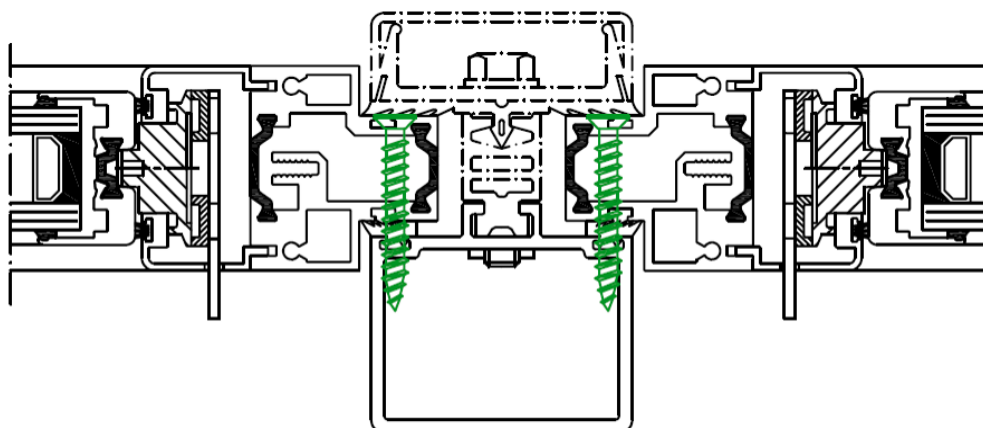
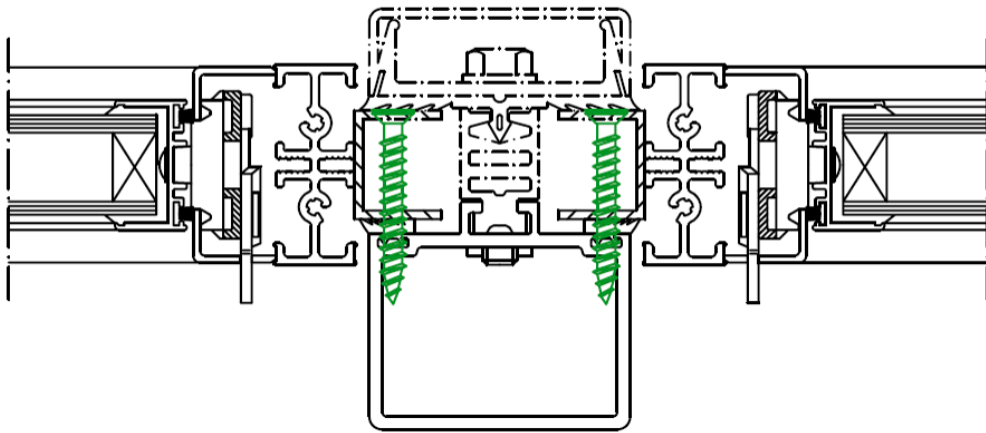


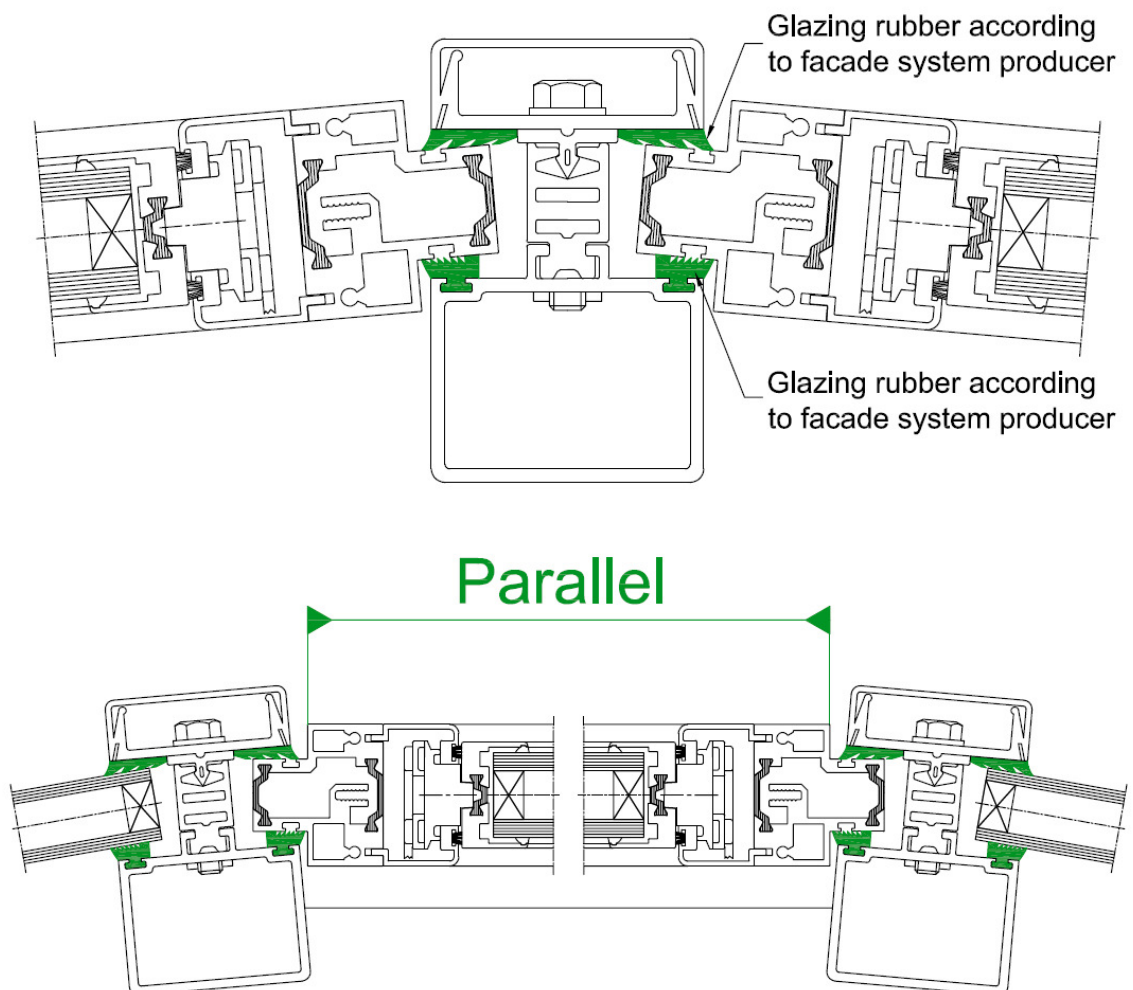
Fig C2 (non thermal broken glazing flange)



- Fix glazing flange of façade system and fix it according to the façade construction supplier's instruction

Installation information for fixation into polygonal façade construction

At installation into polygonal façade construction unit has to be padded on side frames to make sure vertical running frame profiles are parallel to each other

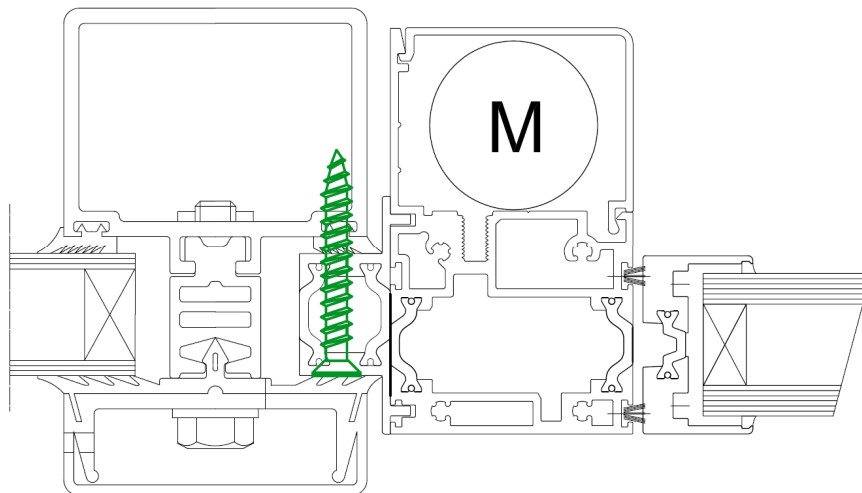


Installation of HAHN Louvre Window INTEGRAL into façade construction

Option 1: Installation into façade construction

At façade systems with clamping fixation an additional glazing flange is required at the units.

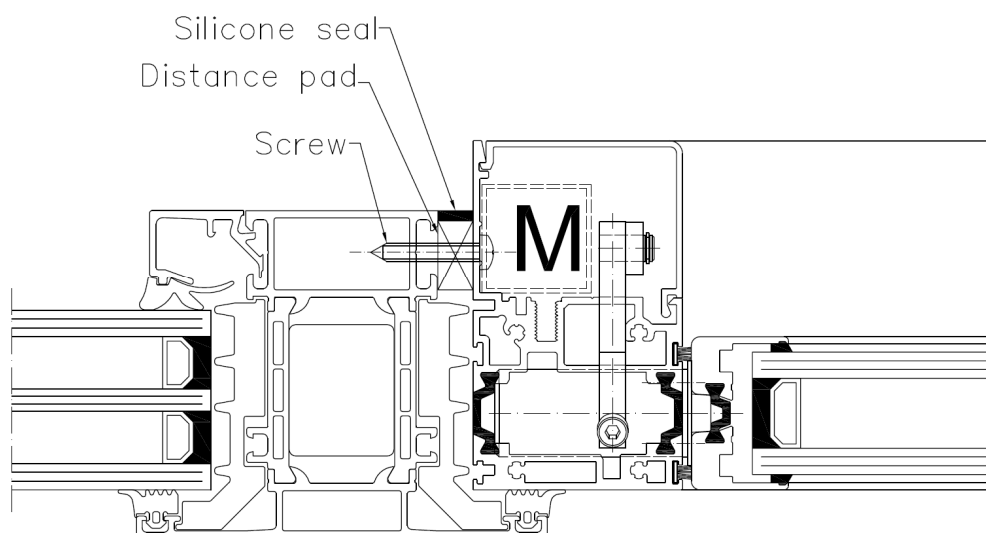
This glazing flange is fixed and sealed surrounding the complete unit:



If it should be necessary to secure the unit alternatively, glazing flange of unit can be screwed directly to support post.

Option 2: Installation into window frame

Installation into window frame by screwing through vent frame into construction - distance pad and silicon sealing is necessary.



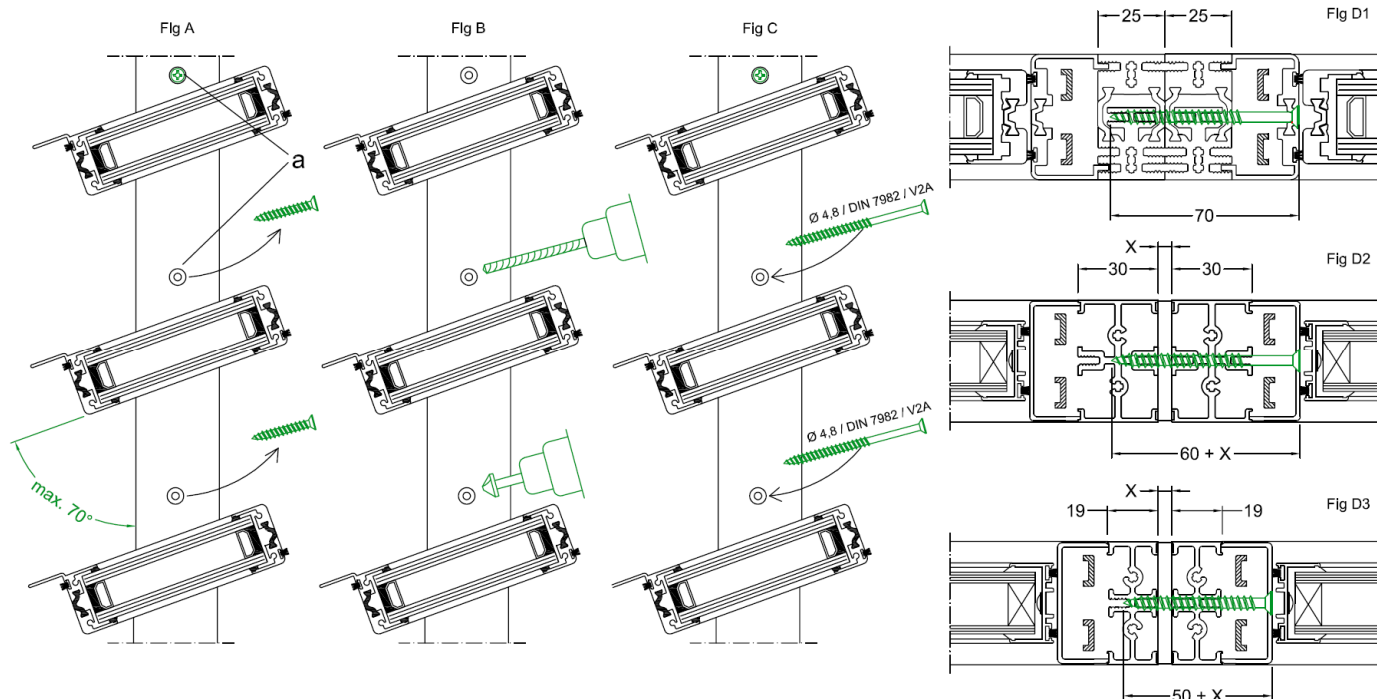
Make sure that fixing screws do not block the motor.

17.4 Coupling of units besides each other

If HAHN Louvre Windows have to be installed beside each other, vertical frames have to be screwed together. Only use boreholes in from HAHN Lamellenfenster GmbH already made into the side frame profile (drawing below)



- Point of origin: HAHN Louvre Window is installed, packing pieces are fitted and window is secured
- Open the unit to a maximum of 70° (this avoids linkage mechanism being damaged).
Note: Actuator types LAH 65 and LAH 65K may only be removed once HAHN Lamellenfenster GmbH has approved this
- Remove screws (Fig. A) :
 - up to 250 mm Louvre height: Every 2nd screw / from 250 mm Louvre height: All screws
- Drill through both window frames (∅5 mm impact dowel for frame 1, ∅4.2 mm for frame 2).
- Make core drill hole for ∅ 4.8 mm countersunk screw (Fig. B)
- Drill countersink screw ∅ 4.8 mm (Stainless steel A2 DIN 7982) into window frame and tighten screw (Fig. C)
- Fig D1 = S9-iVt 05, S9-iVt-05 Allglass, S9-45°
- Fig D2 = S9 and S9-iV with big (30 mm) frame profile
- Fig D3 = S9 and S9-iV with small (19 mm) frame profile



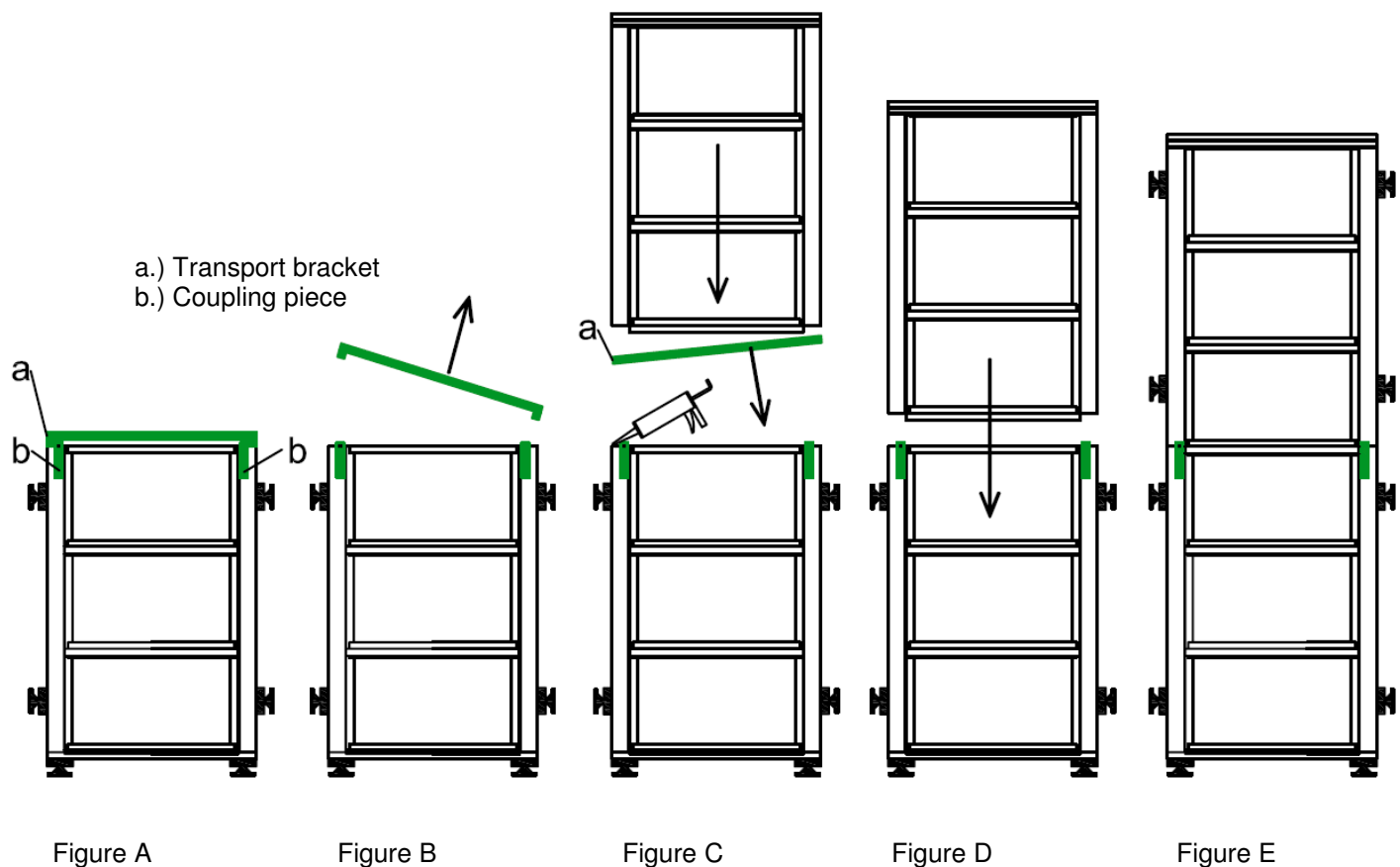
17.5 Coupling of units on top of each other

Some units are provided separately so as to reduce weight and make handling on site easier.

These units have to be coupled on site.

Method of fixing:

- Install the bottom-most unit, fit packing pieces and secure window (Figure A) – see instructions above
- Remove transport bracket (wooden strip) (Figure B)
- Apply silicone to top surface (Figure C)
- Remove transport bracket from upper part of the ventilator (Figure C)
- Bring upper unit on top of the bottom unit. Coupling pieces will help to provide an exact fit. (Figure D)
- Install upper unit – see instructions above (Figure E)



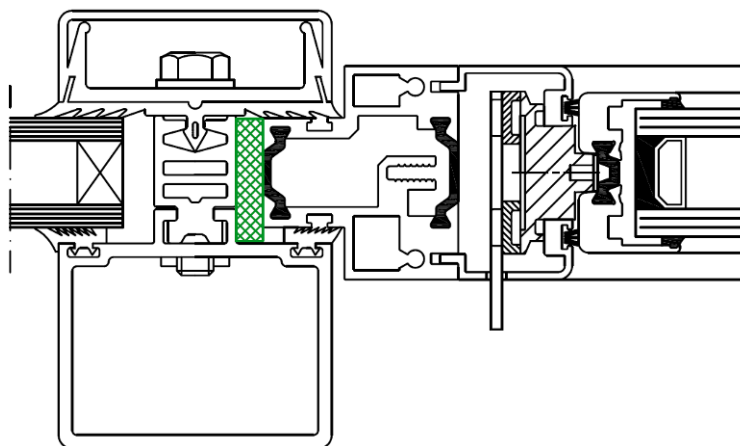
17.6 Additional installation instructions for RC2 windows (Louvre Window S9-iVt-05)

If the HAHN Louvre Window type S9-iVt-05 has been ordered according to classification “RC 2” to DIN V ENV1627 – must be specified with order – additional installation instruction guidelines must be followed.

▪ Installation into façade construction

At least on every second louvre a pressure-resistant backing with a plastic block material of min. 70 mm length is necessarily required (Fig A)

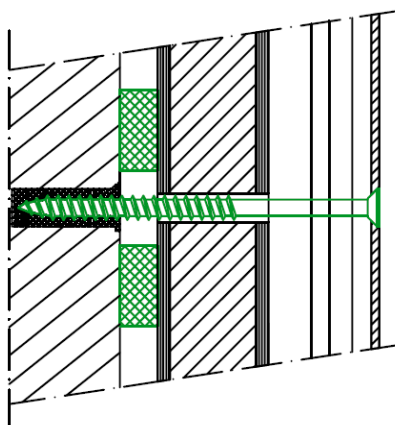
Fig A



▪ Installation into brickwall opening

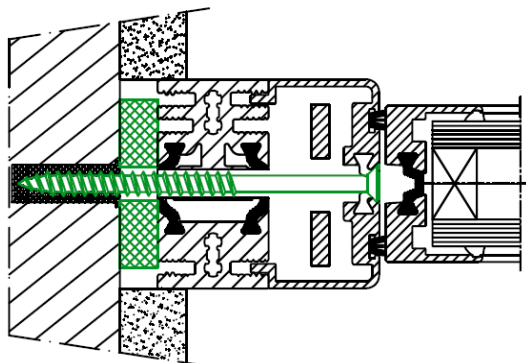
The louvre windows must be bolted at least every second blade through the vertical frame and back-filled with a pressure-resistant plastic block material (no impact dowel or similar).

Use already existing boreholes by HAHN Lamellenfenster GmbH only (see point 8.3.1. to check order of assembly)



RC2 Requirements to brickwall opening:

- Brickwall opening acc. to DIN 1053-1
 - Min. nominal thickness: 115mm
 - Compressive strength class of stones: Min. class 12
 - Mortar group: Min. 2
- Reinforced concrete acc. to DIN 1045
 - Min. nominal thickness: 100mm
 - Strength classification B15



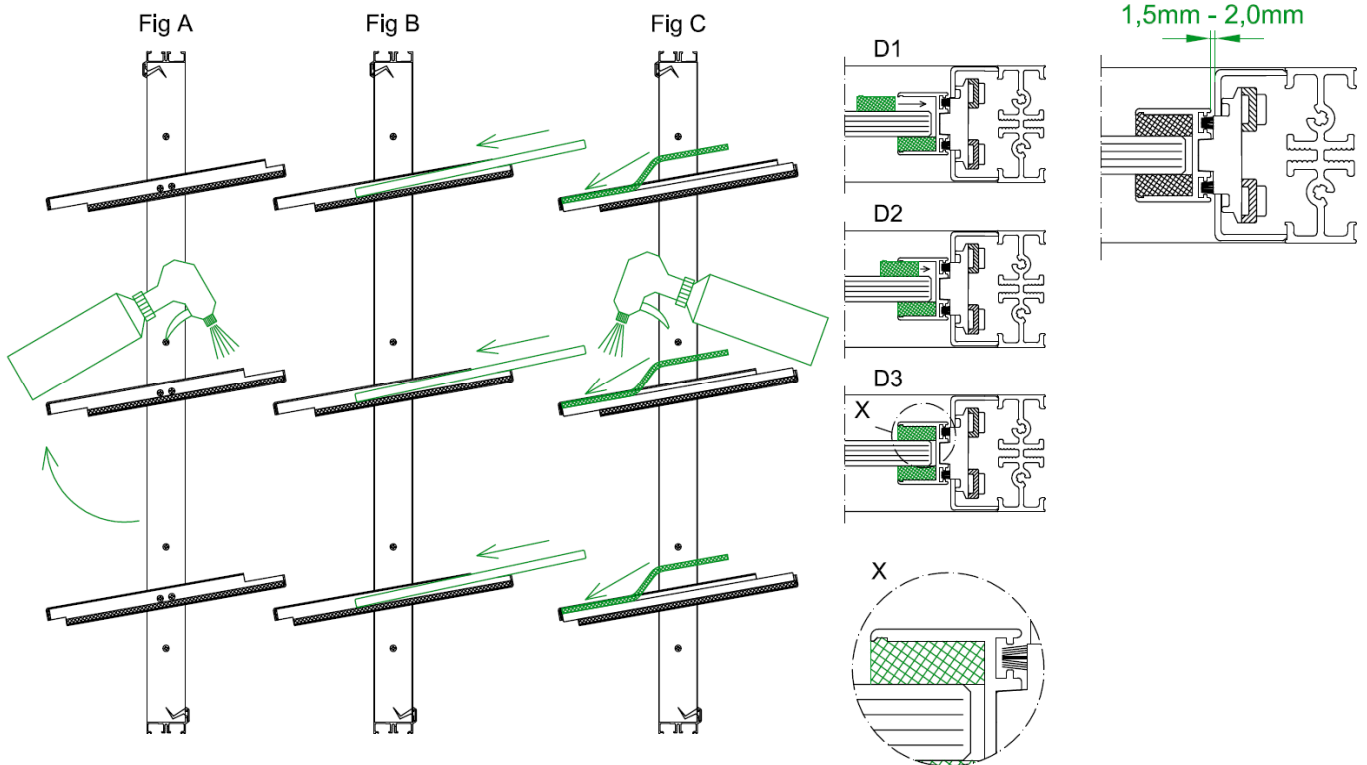
17.7 Installation of single glass louvre blades into mounted S9 window frame

Unless otherwise agreed, HAHN Louvre Windows Type S9 will be supplied unglazed.

Glazing has to be made after installation of units from inside of the building.



- Point of origin: HAHN Louvre Window S9 is installed, packing pieces are fitted and window is secured
- Open the unit (Fig. A)
Actuator types LAH 65 and LAH 65K may only be removed once HAHN Lamellenfenster GmbH has approved this
- Spray glass cleaner on installed glazing rubbers (Fig. A)
- Wear work gloves during glazing of units to avoid injuries
- Sort and arrange glass panes
(Note: On some units top and/or bottom pane sizes differ to remaining panes)
- Install and adjust glass panes into fixing clips (Fig. B)
- Spray glass cleaner on rubber gaskets supplied with units and insert gasket into glass fixing clip (Fig. C)
- Insert gasket until it locks into place (D1-D3 Detail X)
- Close window
- Adjust glass fixing clips – clearance on complete unit 1.5 mm to 2 mm at complete unit
- Test run

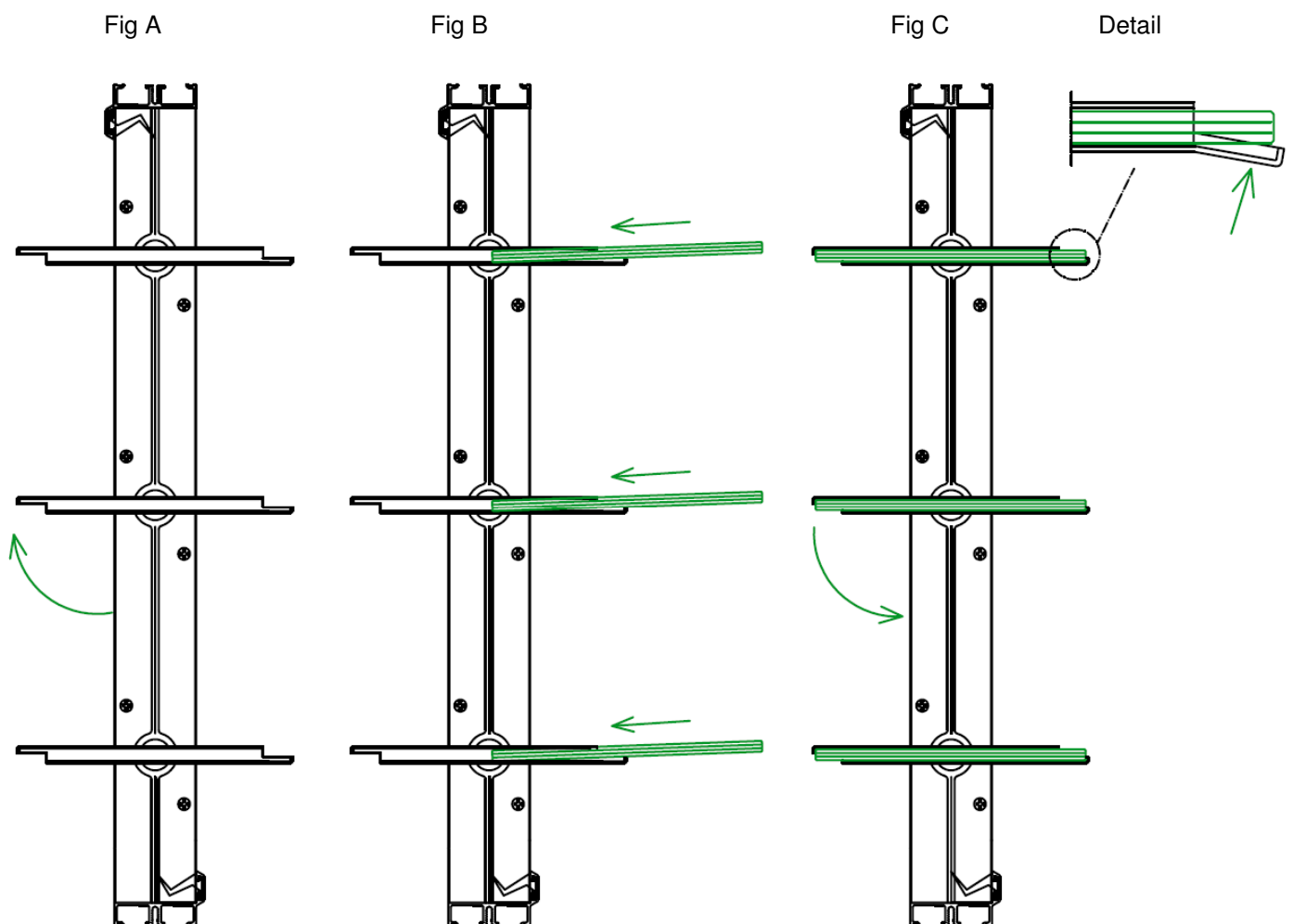


17.8 Installation of single glass louvre blades into mounted NACO window frame

HAHN Louvre Windows Type NACO will be supplied unglazed.

Glazing has to be made after installation of units from inside of the building.

- Point of origin: HAHN Louvre Window NACO is installed, packing pieces are fitted and window is secured
- Open the unit (Fig. A)
- Wear work gloves during glazing of units to avoid injuries
- Install and adjust glass panes into fixing clips (Fig. B)
- Bend fixing clip to the bottom of each louvre (Fig C and detail)
This installation step can be eased when using a small wooden pad between bending edge and glass.
- Close window
- Test run



17.9 Installation of single louvre blades into mounted TAIRMO/TAIRMO-Allglass window frame

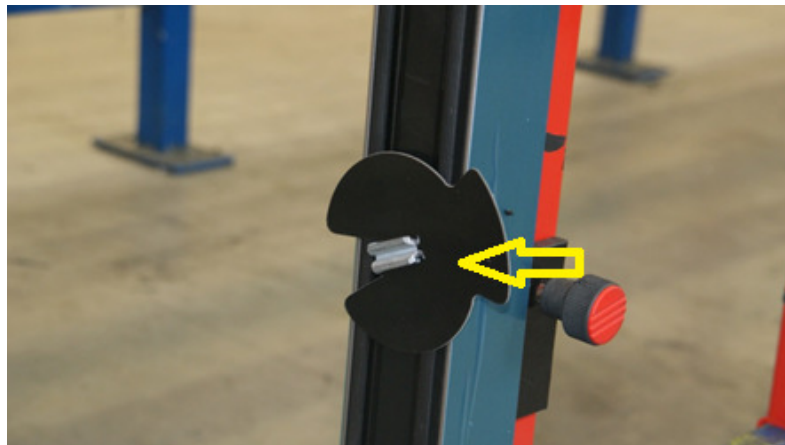


- Point of Origin: Louvre window frame is installed, packing pieces are fitted and window is secured
- Open unit to max. 45° (this avoids linkage mechanisms being damaged)

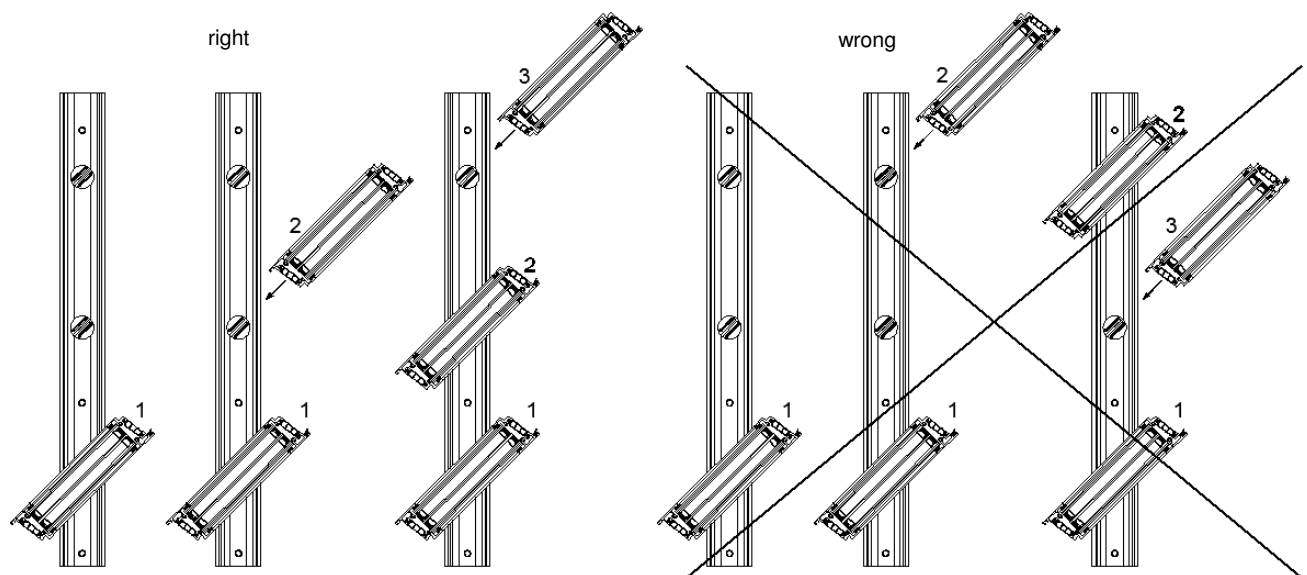
Actuator types LAH 65 and LAH 65K may only be removed once HAHN Lamellenfenster GmbH has approved this

Insert black pastic cap (Photo A)

Photo A



- Insert louvres simultaneously (with 2 engineers) into louvre pivot once black pastic caps are fixed onto the pivot bearings. Louvre blades are numbered, necessarily follow the order
- As soon as TAIRMO/TAIRMO-Allglass louvre blade has been insert correctly, it can not slide downwards

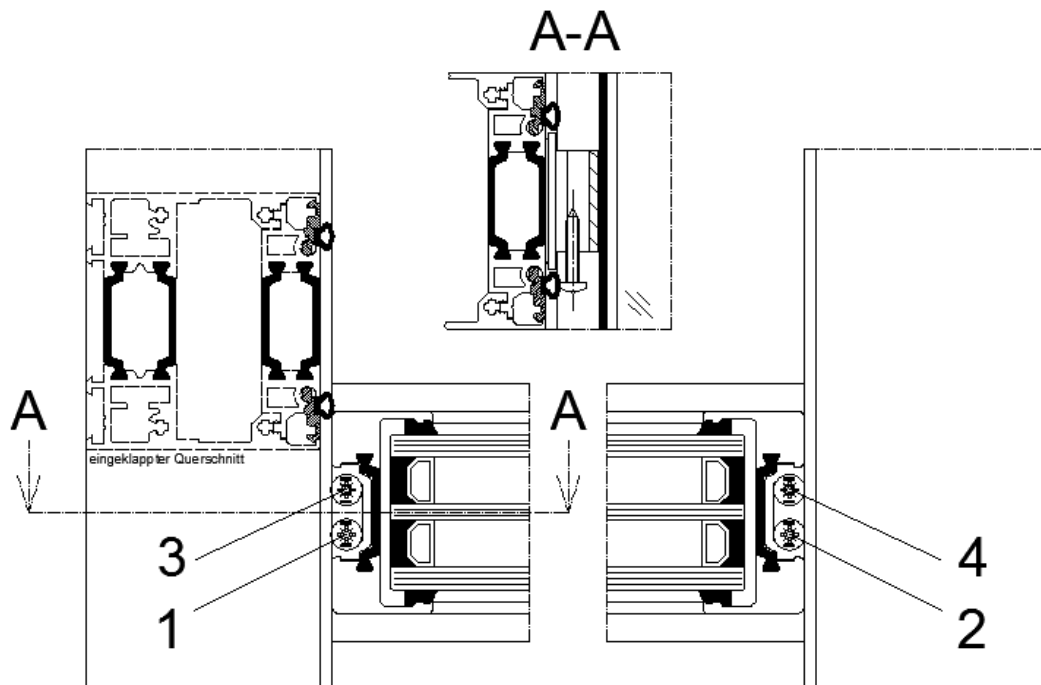


Pay attention that sealing on side does not get damaged during this process

Open louvres fully as soon as all louvre blades are installed

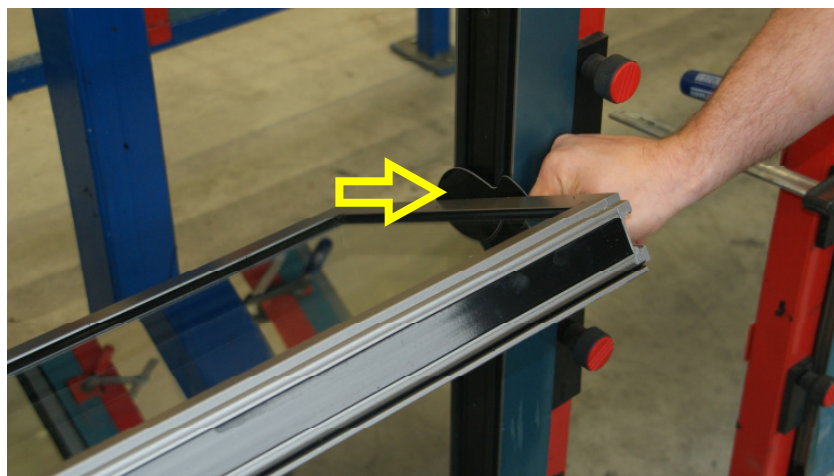
Slightly tighten all four screws (3.9 x 1.9 mm) but do not yet fix them.
Add fat onto bit that screw does not fall down (special tool "bit long" is attached to delivery)

Please pay attention that: Bottom screw (1+2) left and right have to be tightened first.
After this, fix screws 3+4



Remove plastic caps once blade is installed (Photo B)

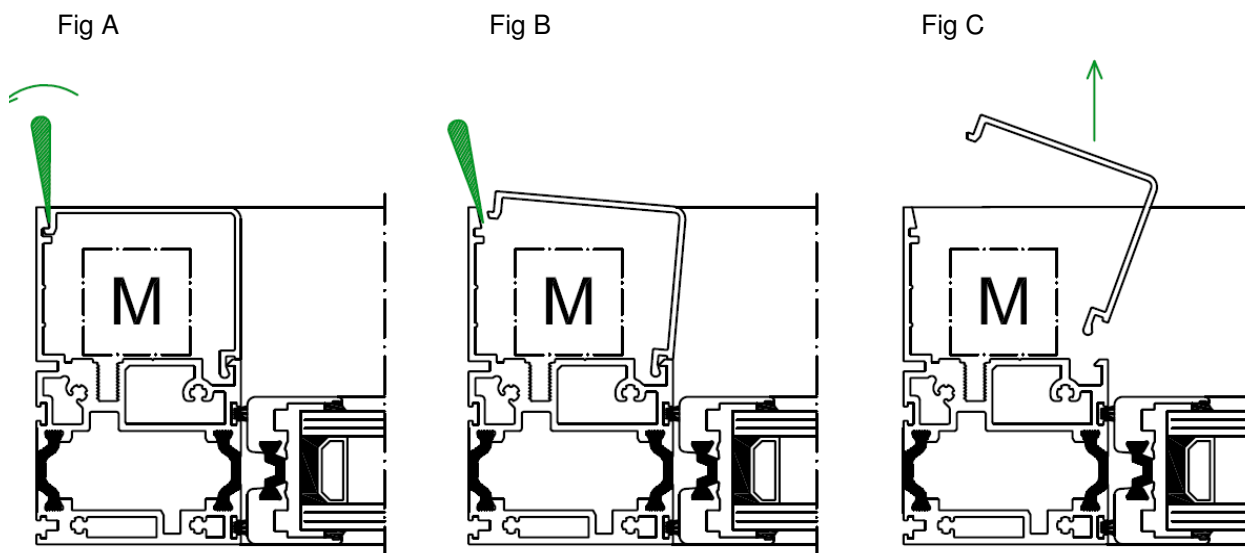
Photo B



17.10 Louvre Window Integral – Window frame / motor cover

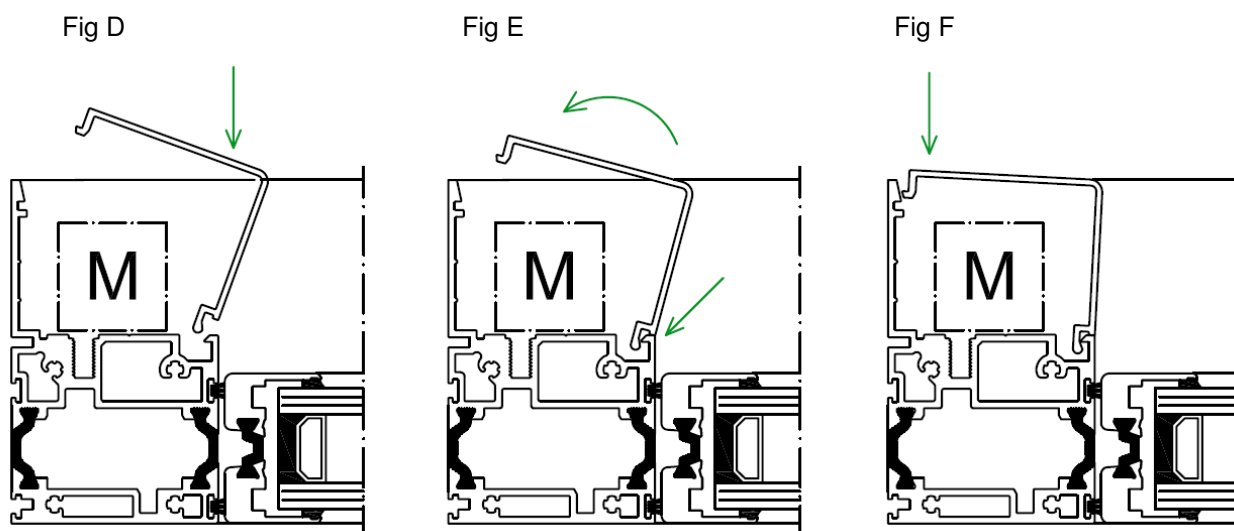
How to open the window frame / motor cover

Opening of the vertical frame has to be made by using a spatula. Insert spatula into joint of profile (Fig A) and rotate until the cover releases (Fig B). Repeat this process at different height positions. Cover can then be removed (Fig C).



How to close the window frame / motor cover

To close the vertical frame, the cover is slightly inclined and led to the element frame (Figure D). Then the cover is rotated so far until it rests on the frame element (Figure E). Now press on the profile until it snaps into place (Figure F). This process must be repeated at different height positions.

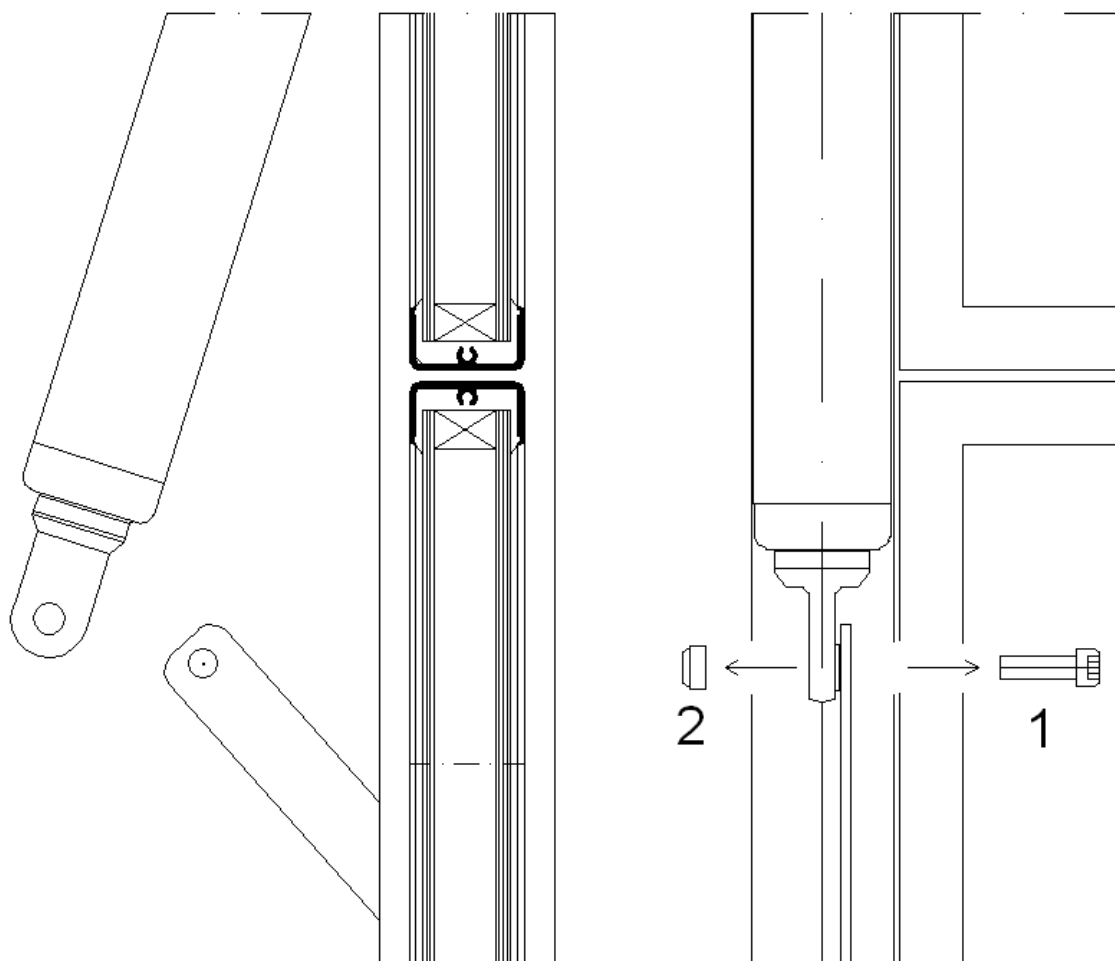


17.11 Removal of actuator in case of emergency

At accidents or incidents that lead to a blocking of the louvre windows e.g. objects or body parts trapped action must be taken immediately. The following description leads how the electric or pneumatic control of units can be removed manually to open units independent from their controls. At actuators installed on site please proceed analogously.

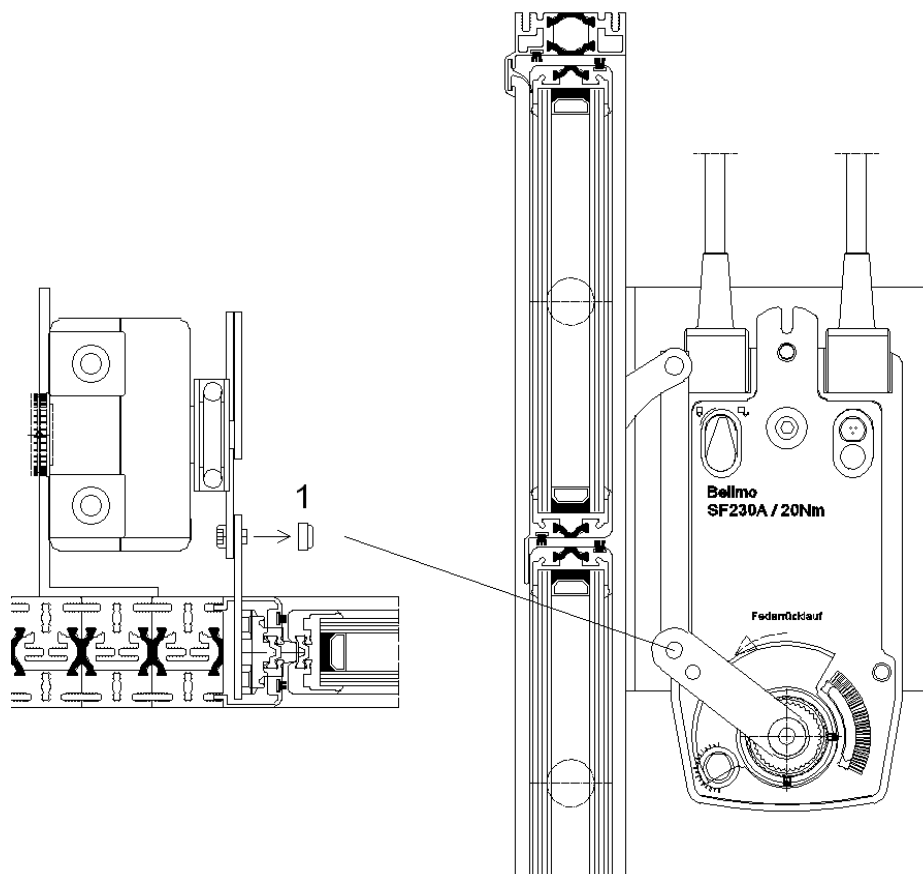
Beikirch HLA 165 and Elero Picolo 0

Remove self-locking nut and pull off screw which is fixing the actuator to the operating lever.
If the force which acts on actuator and connection is too high, motor base has to be unscrewed.



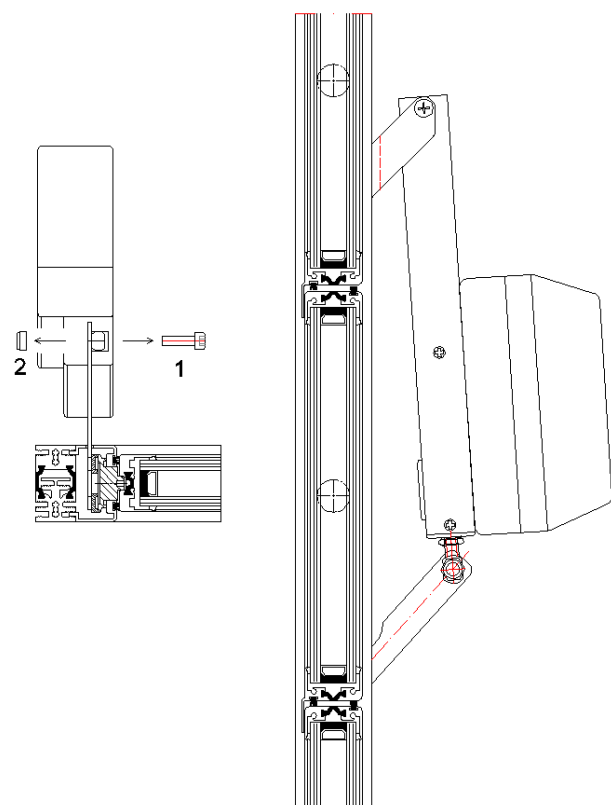
Belimo Spring return actuator

Loose nut and pull bow back slightly.



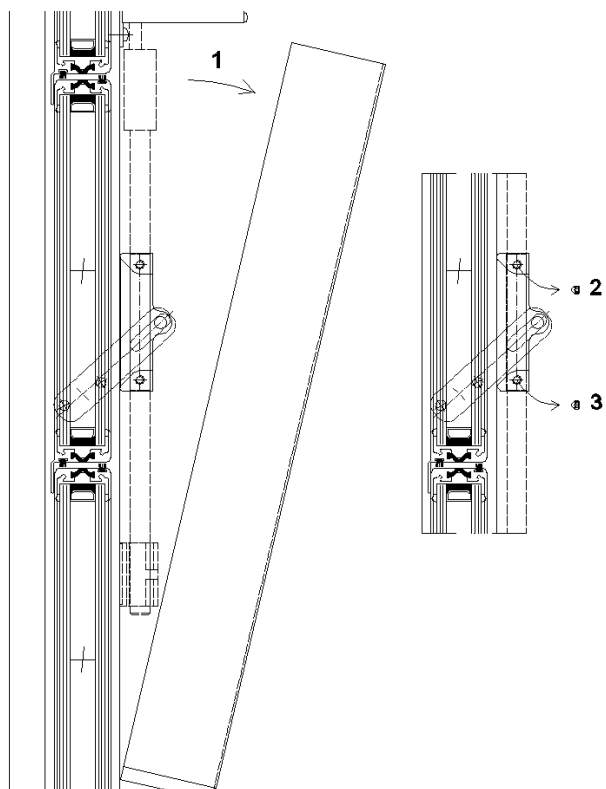
D+H LA_ZA

Remove self-locking nut and pull off screw which is fixing the actuator to the operating lever.
If the force which acts on actuator and connection is too high, motor base has to be unscrewed.



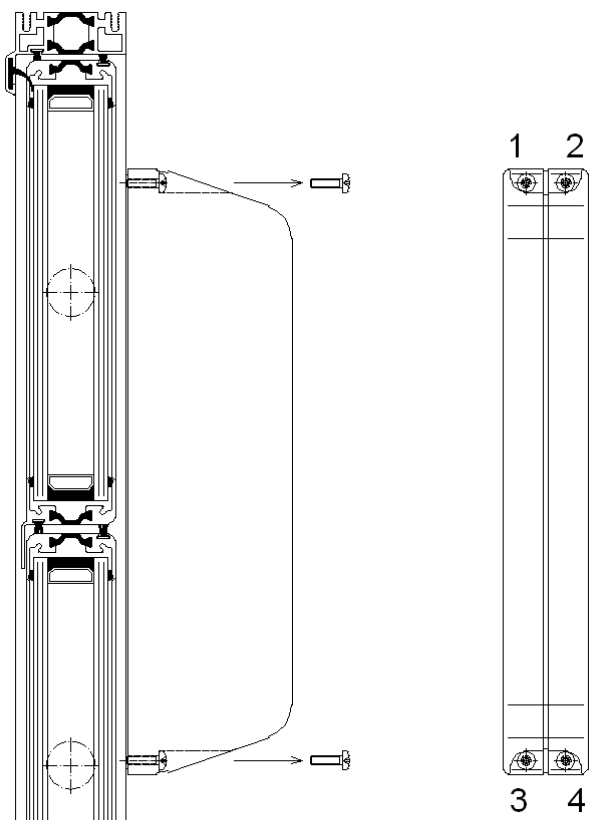
ESCO FA 121 R

Remove linkage cover, loose grub screw from operation lever. Operation lever can now be moved at external linkage and louvre blades can be opened.



D+H LAH 65

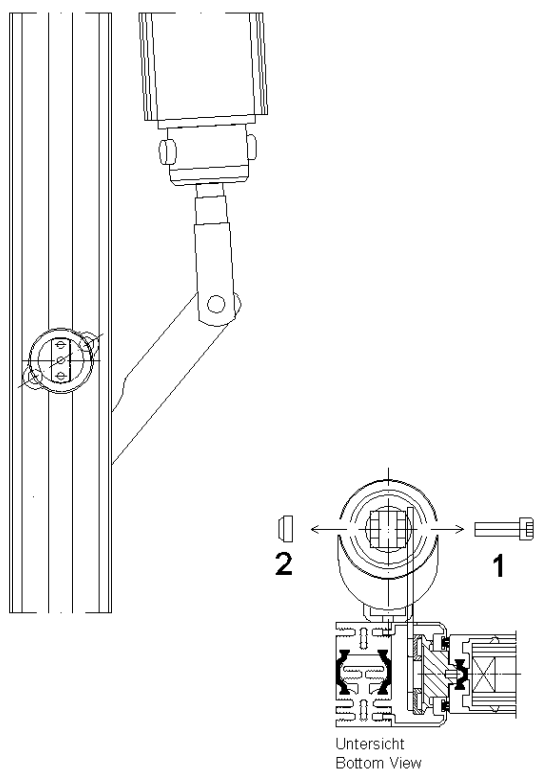
Remove the 4 no Torx screws (T20) on top and bottom of actuator to disassemble it from the unit



Pneumatic control

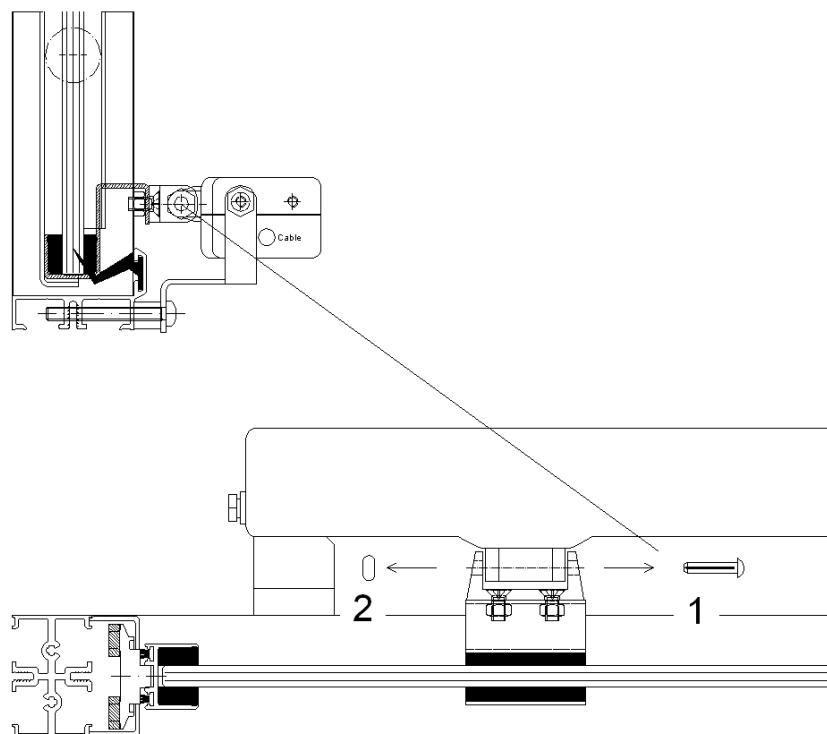
Remove self-locking nut and pull off screw which is fixing the actuator to the operating lever.
If the force which acts on actuator and connection is too high, motor base has to be unscrewed.

Detail right hand side below is showing bottom view.



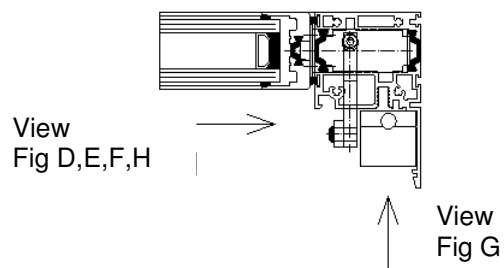
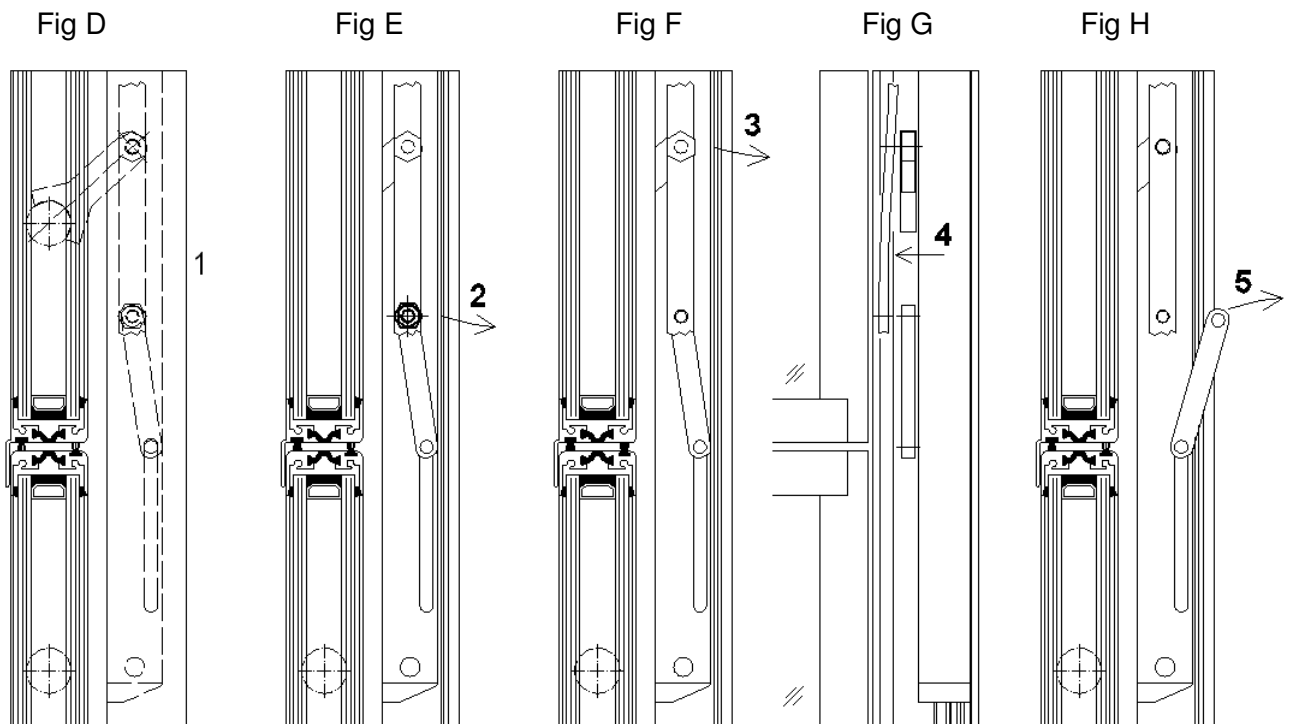
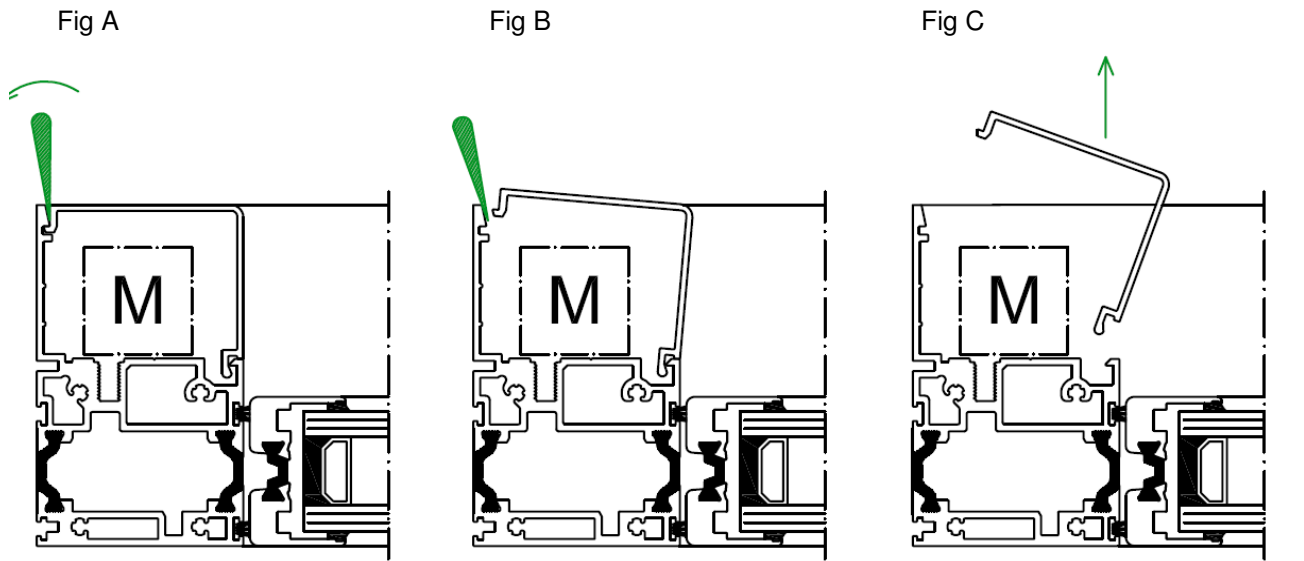
D+H Ventic

Remove socket pin with secure splint at wing housing



LDH 800

Remove cover housing by use of a spattle – spattle has to be positioned in splice at profiles (Fig A) and turned slightly until cover housing gets open (Fig B). Repeat this at different height positions of the unit. Following to this, cover housing can be removed (Fig C)



17.12 Final testing and start of operation



A function test has to be made after the window has been installed correctly. The actuator has to be connected to the appropriate power supply (according to wiring diagram available at www.hahn-lamellenfenster.de)

only by an electrically qualified person and opened and closed at least once.

Should the window open or close improperly, check if installation has been made correctly.

Correspondingly, this also applies to mechanical drives / manual actuators.

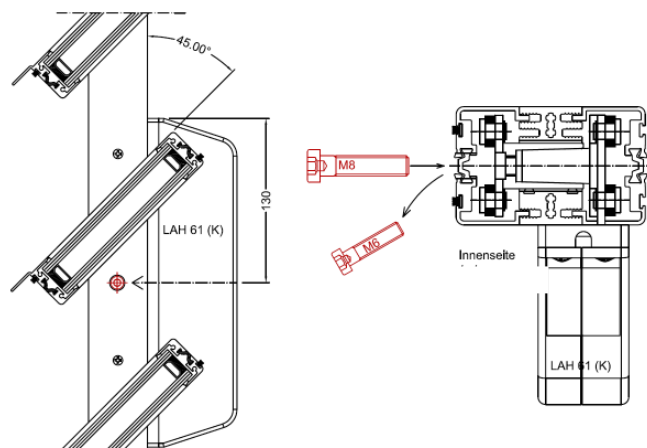
Actuating of Louvre Window may be effected only through the power levers provided. An adjustment of items by pressing against the blades contrary to force of motor mechanism can damage rotation inventory and mechanics. A proper function and tightness of louvre blades is then not longer ensured. Opening area of louvre blades has to kept free of any obstacles. Opened louvres may not be used to bear any objects. Cables, pipes or else may not run through opened louvres.

17.13 Setup of a LAH 65 (24V/230V) mid mullion motor

Double breasted GBH Louvre vents can be operated synchronously by mid mullion motors type LAH (assumed that motor power is sufficient for the total number of blades). The power transmission is achieved by conical fillers installed into mid mullion. Frequent blockade of louvre blades can move these fillers, so that the louvre blades do not longer open and close synchronously.

To adjust the louvre vents with a new setup, follow these steps:

- A.) Open louvre vent by 45° - do NOT remove motor
- B.) There is a borehole in height of the actuator – see drawing 1 below.
Loose and remove M6 pan screw
- C.) Replace M6 screw with M8 screw (min. length 50 mm) and tighten screw as long as necessary until louvre blades left hand side from mid mullion can be moved manually by hand
- D.) Loose and remove M8 screw
- E.) Insert M6 pan screw again, but do NOT tighten screw
- F.) Bring louvre blades left hand side in same position than vents on right hand side by using a long water level on blades left and right hand side
- G.) Tighten M6 fast (force-fit conical connection)
- H.) Test run



Example shows type S9-iVt-05

17.14 Sealing of pneumatic control fittings

Compression- or swiveling fittings for supply and exhaust of air are fixed loose only and need to be turned into the cylinder body and sealed on site by using a liquid sealant (e.h. Locite 243).

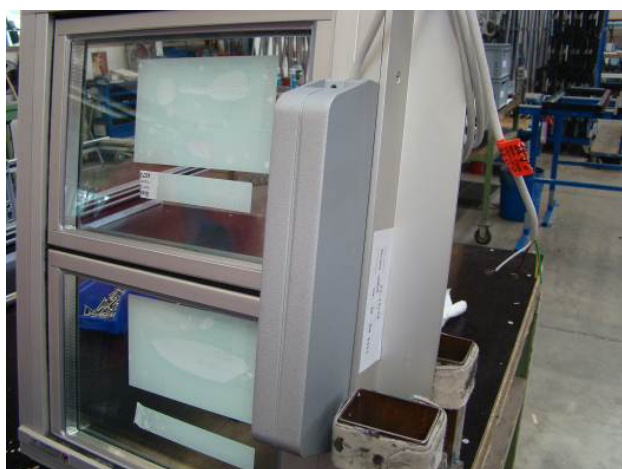
18. Replacement of LAH actuators

DO NOT REMOVE AND/OR REPLACE ANY ACTUATORS WITHOUT APPROVAL OF GBH.

Otherwise warranty gets lost.

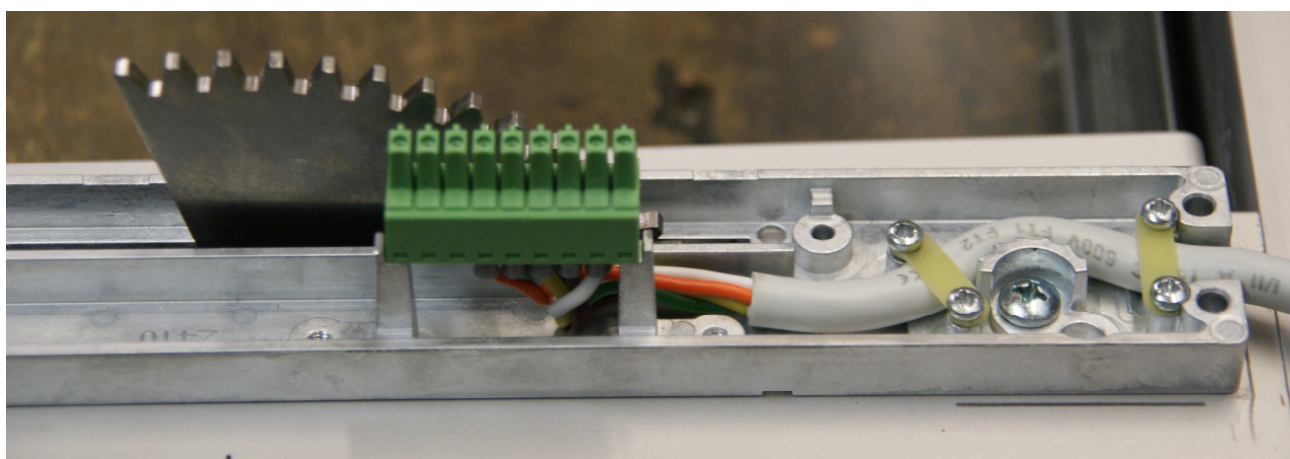
Individually programmable (via software) from D+H Service and Sales partners or GBH.

Remove the 4no Torx screws (T20) on top and bottom of actuator to disassemble it from the unit

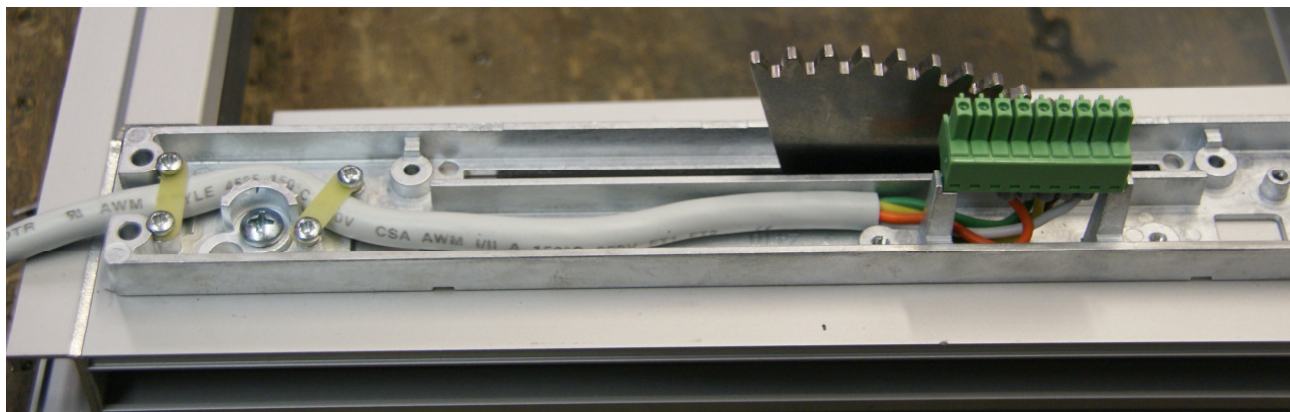


Check cable entry once actuator has been removed:

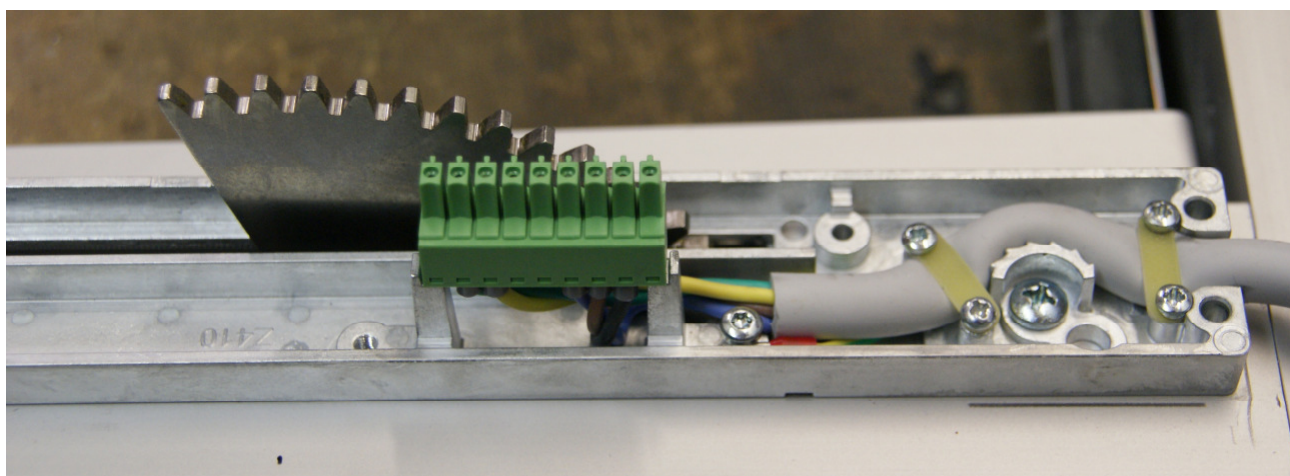
LAH 65 24V top entry



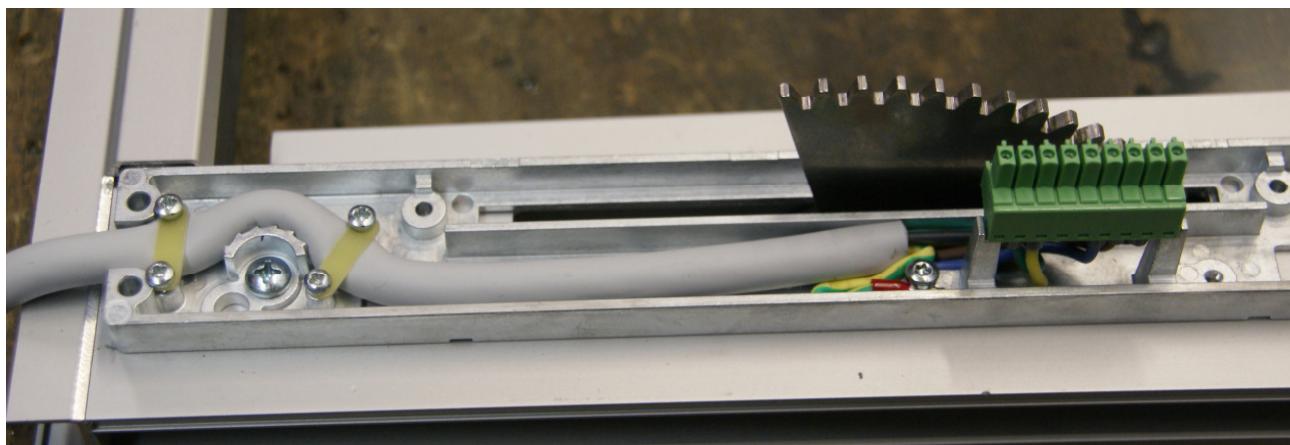
LAH 65 24 V bottom entry



LAH 65 K 230 V top entry



LAH 65 K 230 V bottom entry



Window has to be closed when installing a new actuator. Motor has to be pressed fix to already installed motor bracket and fixed again by tightening the screws.
When finger trapping protection is to be activated, unit has to be opened and closed one time. To check whether function is activated, close unit and hold a finger thick object between (12-15 mm) the closing blades. Motor does register blocking of closing and opens to about 60° opening angle. After a 5 second stop louvrew will close again.
Electric power has to be steady during complete test run.

19. Requirements for longevity



Windows have to be cleaned and require maintenance in a periodical cycle to achieve longevity. Furthermore the correct installation of windows will have to be checked before beginning of operation. Most important is:

- Check whether Louvre Window has any outer damages
- Check whether window is perpendicular to all sides (take diagonal values)
- See if window frames are installed parallel to each other:
 - Take width of unit on top and bottom frame as well to middle of unit (tolerance +/- 1 mm)
 - Take height of unit on right and left frame as well to middle of unit (tolerance +/- 1 mm)
 - Check gaps between vertical frame profile and louvre (between 1.5-2.5 mm on complete height)
- Check if window is running smoothly (do not remove actuator!)
- Check if windows are running parallel and if they close properly
- All Louvre Window edges have to be clear of obstructions at any time!

20. Maintenance

HAHN Louvre Windows at use in exterior walls are exposed to weather and environmental conditions, therefore they are subject to unavoidable contamination. To keep the decorative appearance and function, HAHN Louvre Windows have to be cleaned and maintained at least once a year, at rough environmental conditions even more often, according to the maintenance manual.

In the following instructions, we have limited ourselves to the main points for optimal care and cleaning:



- Use clear water only which may contains small additives of neutral or weakly alkaline detergent (pH 5-8)
- Do not use steam- or high pressure cleaners
- Use soft cloths or sponges only
- Surface temperature during cleaning may not exceed 25°C (detergent also may also have max. of 25°C) when window frames are colour coated
- Do not use scratching or abrasive cleaners
- Do not use acid or strong alkaline cleaning detergents
- Do not use any organic solvents which contain esters, ketones, alcohols, aromates, glycol ethers, halogenated hydrocarbons or similar ingredients.
- Do not use any detergents with unknown mixture
- When cleaning coated surfaces, please do a test application on a hidden surface making sure the paint does neither get mechanically nor chemically damages first
- To clean the brush seals, open the units and clean them with a coarse scrubbing brush in dry condition. At very persistent dirt please mouisturise the brush or use a neutral detergent


For more detailed instructions for properly cleaning of aluminum components, please contact:

- Aluminium-Zentrale Beratungsstelle- und Informationsdienst
GER-40003 Düsseldorf (Leaflet A5)
- Gütegemeinschaft für die Reinigung von Metallfassaden e.V. (GRM)
GER-90402 Nürnberg
- American Architectural Manufacturers Association
USA (AAMA 610-1979 Cleaning Procedures)
- Regulations and notes of the powder producer, e.g.
www.Tiger-coatings.com / Leaflet 1090

21. Preventive maintenance


HAHN-Louvre Windows are virtually maintenance free. To keep the blades running smoothly, the following points should be noted:

- Regular cleaning of windows, especially seals and brush seals (intact seals are fundamental condition for a tight Louvre Window. Though all materials used are UV and weather resistant, a conditional exchange [due to frequent use, improper cleaning or high age] could make sense)
- Check running smoothness of Louvre Window regularly (once a year)
- Add Teflon spray to pivot bearings if needed
- Setting of manual remote controls should be reviewed annually prior to the period of bad weather and readjusted if necessary
- Electronic control type LAH 65 and LAH 65-K may be removed by HAHN Lamellenfenster GmbH or from HAHN Lamellenfenster GmbH authorized specialized companies only

 We basically recommend a maintenance contract with a specialized company or HAHN Lamellenfenster GmbH directly.

22. Repairing

Necessary repairs should be done by HAHN Lamellenfenster GmbH or from HAHN Lamellenfenster GmbH authorized specialized companies only. Any preventive action in case of an emergency are excluded.

 When repairing or remodelling only use original HAHN Lamellenfenster GmbH spare parts. Please check in advance which parts are necessary.

At the following points you can check whether a repairing is necessary:

- Broken glass or other deformations on profiles, linkages or controls
- Louvres which are operated by one actuator do not run parallel to each other or do not run at all
- Electric control does not work (here please first check the electric wiring, the control panel and any additional accessories like wind- and rain sensors by an electrician).
- Louvre blade has moved out of position (please secure louvre blade – window may not be operated!)
- Operating lever on window frame damaged or not in correct position



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