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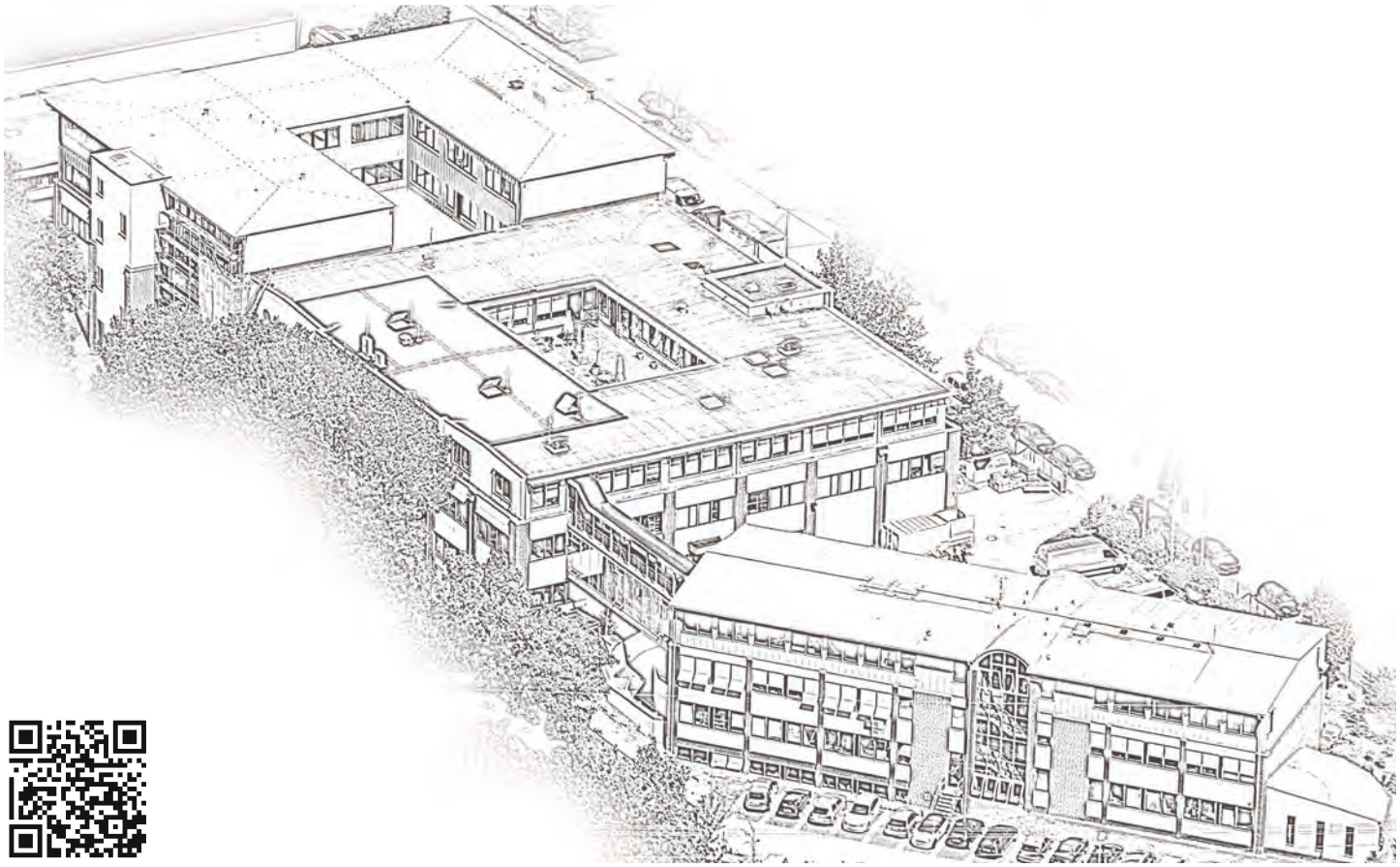
+ DRIVES BRACKETS

D+H company profile

Innovations "Made in Germany"

D+H Mechatronic AG has been setting trends in the market for 50 years with high-precision SHEV and ventilation technologies. We are number 1 in Germany and also rank among the market leaders internationally as a driver in the industry for natural, motorised smoke and heat exhaust ventilation (SHEV) and as a premium supplier. Our family-owned company in Ammersbek near Hamburg uses state-of-the-art technologies to research, develop and produce quality products that are tested and certified. We inspire our customers with customised solutions that are made in Germany and with a high planning and installation reliability on site.



D+H headquarters in Ammersbek, Germany

Certification in accordance with:

VdS

- ISO 9001
- recognised products
- recognised systems

We are a member of:

ZVEI:

Expert Group for
Electric Motor Driven
Smoke and Heat Ventilation
Systems

Quality ‚Made in Germany'

Planning and installation reliability worldwide

Along with the large D+H service and sales partner network, our customers, such as architects and planners, benefit worldwide from outstanding proximity to our customers and the great expertise of our partner companies. With over 100,000 objects implemented worldwide, we have a high degree of experience and skills in the area of SHEV and natural ventilation.

Well connected

bimobject®

Awards

german brand award 17 winner

German Design Award NOMINEE 2014

Großer Preis des MITTELSTANDES

The Best of German Engineering

BILDUNGS & TALENT MANAGEMENT 2015 1.PLATZ

BOB BEST OF BUSINESS TO BUSINESS

Your trust requires 5 stars

Specialized expertise - The knowledge to turn ideas into reality

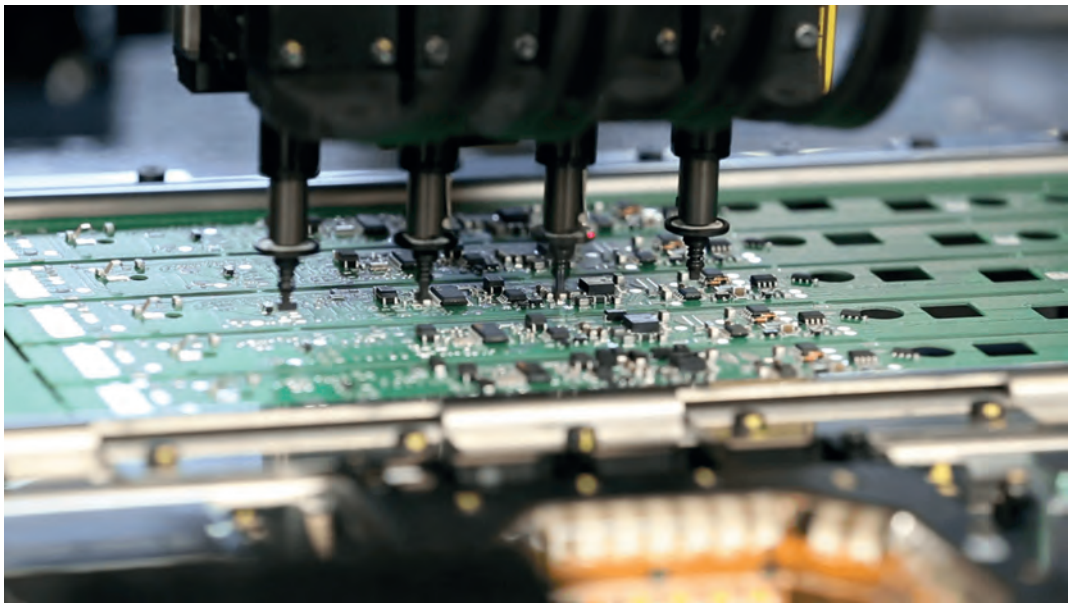
All we need is love and air to breathe. Yes, you read that correctly. We are as much in our element when it comes to the topic of breathing air as with our love for your product. We tackle the development stage of your ideas with 100 % of our passion and dedication. We are pushing forward and work with an eye for the future, without forgetting to look back on our half a century of experience. This is the source of the experience of a world market leader for smoke extraction and natural ventilation that is so valuable for your product development. Today, as yesterday, we meet every challenge with our unique industry expertise. This knowledge is attained through consistent market-, customer- and service-oriented actions. It serves a single purpose: developing and bringing your individual wishes to life

Development - Where others stop, we keep going on

Our in-house research and development expertise not only extends from the first sketch through to the market-ready product. Your completed product simply becomes smarter than others due to the applied intelligence of our experienced engineers. Why? Our developers have mastered all disciplines needed for your product in order to surpass your wishes and demands. Whether mechanical or electronic systems, embedded software or front-end development - our developers have the most diverse skills of the specialists at D+H, using a perfected approach to drive forward and implement your idea. They take on development in all disciplines in order to make your product better than you could have imagined. Taking advantage of a high level of expertise and in close cooperation with Sales, Product Management, Purchasing and external cooperation partners, we devise, develop and test your innovation with the utmost care, dedication and faith in our abilities.

Production - Capable of setting the pace

Equipping of a circuit board at 20000 components per hour - this is just one of many figures that excite our customers. On an approx. 5500 m² production floor, our state-of-the-art machinery aids about 90 qualified, specialised personnel in the production of your customised products in serial or single-item production. In addition to the automation of various parts of production, hand-made special solutions are also among our strengths. As a result, man and machine integrate the best performance from the production hall directly into your object. Short setup and throughput times, high production depth and a lean production system pave an especially flexible, fast and efficient path to our common goal in our collaboration: Your product.



Technology "Made in Germany" - Creating products cherished by engineers

German engineering - the term implies real long-lasting technology, which even today sparks excitement internationally with respect to "Made in Germany" quality and the German production location. This seal of quality is always preceded by its excellent reputation. As a global premium provider, we naturally feel at home in international terrain. But just the same, we are a family-owned company that is focused on craftsmanship, tied to our region and we know where we come from. As such, your D+H technology will soon also be developed and produced in Ammersbek, in the Hamburg area. That's as reliable as our products. You can also rely on the fact that, without exception, all components must successfully go through in-house stress tests multiple times. Therefore, they exhibit the highest levels of performance before leaving the doors of Ammersbek plant. Our technology is beloved by our customers for good reason.

Quality - Delivering something you can trust

Believing that quality only involves the structure of the product is just incorrect. Quality extends far beyond the product itself. Beyond its high-quality processing and functionality. Quality is what the customer wants and beyond. We want to and can take credit for this added value only because our business is about nothing less than breathing air. In order to meet the most stringent demands for safety and comfort, we must do more than simply push the boundaries of what is technically feasible. The standard of quality in Germany, largely defined by D+H, is also deliberately and purposefully incorporated in European and global standards - for and in the interests of the customer and the safety of us all.

What connects us

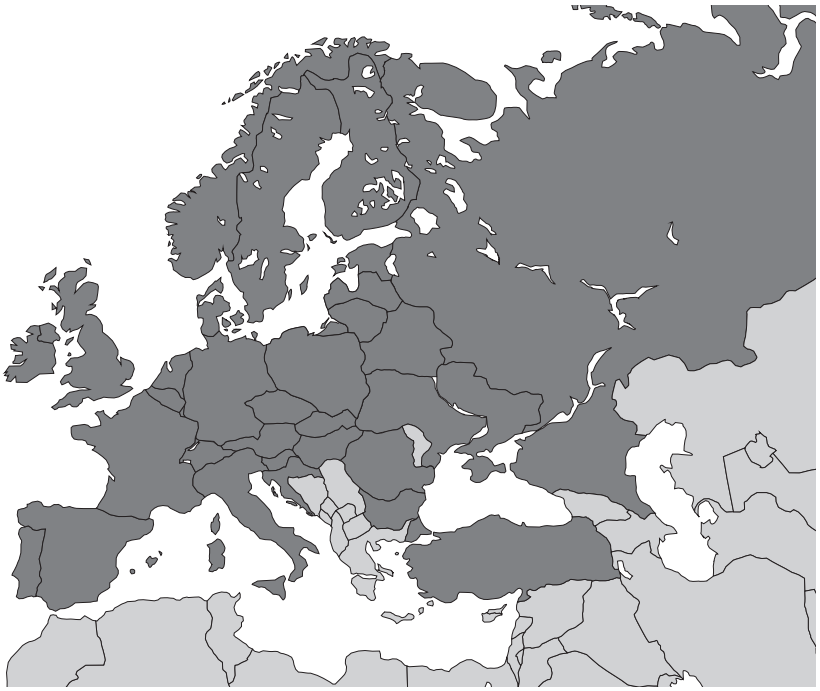
Each product begins with a unique benefit. And the right time to begin your discussion with us. D+H offers you product solutions that set the standards of tomorrow today. Our highly precise drive and control technologies for smoke extraction and natural ventilation bring pioneering innovations into hundreds of thousands of buildings, and with about 500 D+H Group employees worldwide, this ensures an optimal indoor climate and sufficient air in case of fire.

At D+H, you can count on powerful and intelligent drive and control products, a flexible and quick production system, extraordinarily high development expertise, personalised service and our most valuable and unifying product: our knowledge.

D+H Service and sales network

Our network of approximately 130 qualified D+H service and sales partners in over 50 countries is one-of-a-kind. Thanks to this presence of selected specialist companies nearly everywhere, D+H achieves nearly unrivalled proximity to its customers right where they are - and meets the high quality requirements for skilled complete services in all parts of the world: for object-oriented planning and consulting, professional installation and maintenance as well as a reliable supply of spare parts.

D+H Europe



Austria
Belarus
Belgium
Bulgaria
Croatia
The Czech Republic
Denmark
Estonia
Finland
France
Great Britain
Hungary
Ireland
Italy
Kazakhstan
Latvia
Lithuania
Luxembourg
The Netherlands
Norway
Poland
Portugal
Romania
Russia
Sweden
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Slovenia
Spain
Turkey
Ukraine

D+H around the world

Australia
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Canada
China
Hong Kong
Israel
Malaysia
New Zealand
United Arab Emirates
USA

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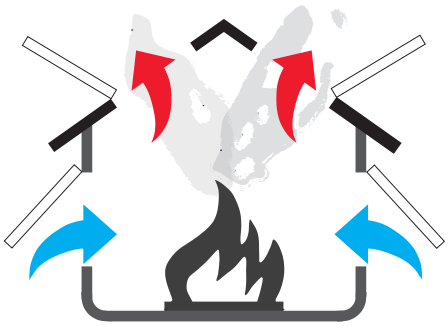
Contents

Why SHEV?

Smoke vent saves lives and protects property

If there is a building fire, the smoke formation and toxic combustion gases represent the greatest danger for people. If fire breaks out, 9 out of 10 people die due to poisoning from inhaling extremely toxic flue gases. A closed room is quickly completely filled with toxic smoke; people in the building are cut off from escape and emergency routes.
For this reason, fast and reliable smoke extraction gains considerable importance. Smoke and heat exhaust ventilators (SHEV) effectively conduct the smoke and fire gases out of the building and can thereby save lives. Controlled by fire-detecting sensors, they open areas in the upper wall or ceiling area, through which the rising hot combustion gases can escape. On the other hand, a low-smoke layer forms in the lower area of a building, which enables people to escape the fire-affected area and the fire brigade to go directly to the fire source.
Property within this low-smoke layer is largely protected from smoke and soot. And the extraction of heat prevents the thermal load on the building structure from causing it to collapse.

Comparison without / with SHEV



Without SHEV:

Toxic fire smoke and extreme heat accumulate in the building and endanger lives.

With SHEV:

Smoke and heat can escape through intake air openings in the lower wall area and exhaust air openings in the upper wall or ceiling area. The smoke is diverted in a stable smoke layer boundary above the area where there are people; escape and evacuation routes are kept free.

Number 1 in Germany in the field of smoke and heat exhaust ventilation

D+H provides innovative standard and customised solutions for smoke and heat exhaust ventilation (SHEV) around the world. For over 45 years we have been developing products for your safety in the event of a fire. As one of the first companies to have developed natural SHEV and as the first manufacturer of certified electric SHEV, today we have more experience and skills than any other provider.
From extracting smoke from a stairwell to complex SHEV systems for large buildings: D+H provides you with a comprehensive programme of tested and certified products for smoke and heat exhaust ventilation.

SHEV compact unit with an integrated smoke vent and ventilation button: receives fire detector signals, evaluates the measurement results, controls the window drives and the ventilation function

Fire detector automatically detects a fire in enclosed rooms

Control elements enable triggering via buttons, with integrated ventilation function

Chain and rack and pinion drives open SHEV and ventilation flaps into any position with precision

Risk Assessment and Protective Measures

Power-Operated Windows (in accordance with the Machinery Directive 2006/42/EG)

Possible danger points at power-operated windows

1. Risk of crushing and injury by shearing on main closing edge
2. Drive (incomplete machine)
3. Risk of impact injury
4. Risk of crushing and injury by shearing on side closing edges
5. Danger point between side closing edge and reveal

Task

Power-operated windows are façade or roofing elements that are equipped with a drive system. These elements are in extremely widespread use as components of smoke and heat exhaust systems (SHEV) and ventilation systems in all kinds of buildings, that are used for a huge variety of purposes. There are potential risks associated with power-operated windows, especially if they are controlled automatically. These risks must be countered by appropriate specifications, defined by the planner, and protective measures, implemented by the installers, operators or maintenance technicians. Ensuring that power-operated windows are safe starts with the risk assessment. This includes identifying possible dangers, putting in place suitable countermeasures and warning of residual risks. A risk assessment is performed at the planning stage, well before installation starts.

Legal basis

Machinery Directive 2006/42/EG, issued by the European Parliament and the European Council on May 17th, 2006, defines a uniform level of protection within the European Economic Area, Switzerland and Turkey, intended to prevent accidents involving machines and incomplete machines when they are being brought into operation. The Appendix to product standard EN 14351-1 for windows and external doors refers to the Machinery Directive. A machine is a unit equipped with a drive system that does not consist of directly applied human force, and includes parts that are connected together, at least one of which is mobile. In this context, it is irrelevant whether this unit is already equipped with a connection cable, or has been connected to its own power supply. As defined in the Machinery Directive, the manufacturer of the machine is the agency that combines the drive or drive system with the window (e.g. the metal fabricator, window manufacturer or SHEV installer). The machine's manufacturer or their representative must ensure that a risk assessment is performed, to identify the health and safety requirements applicable to the machine. That manufacturer or representative accepts general liability for performing the risk assessment correctly, and applying the necessary protective measures, no matter on whose behalf they are acting. The results of the risk assessment must be taken into consideration when the machine is designed and manufactured.

What do I need to do to meet the requirements of the Machinery Directive?

- Carry out risk assessment
- Putting protective measures in place
- Apply CE label
- Determine protection class
- Certificate of conformity

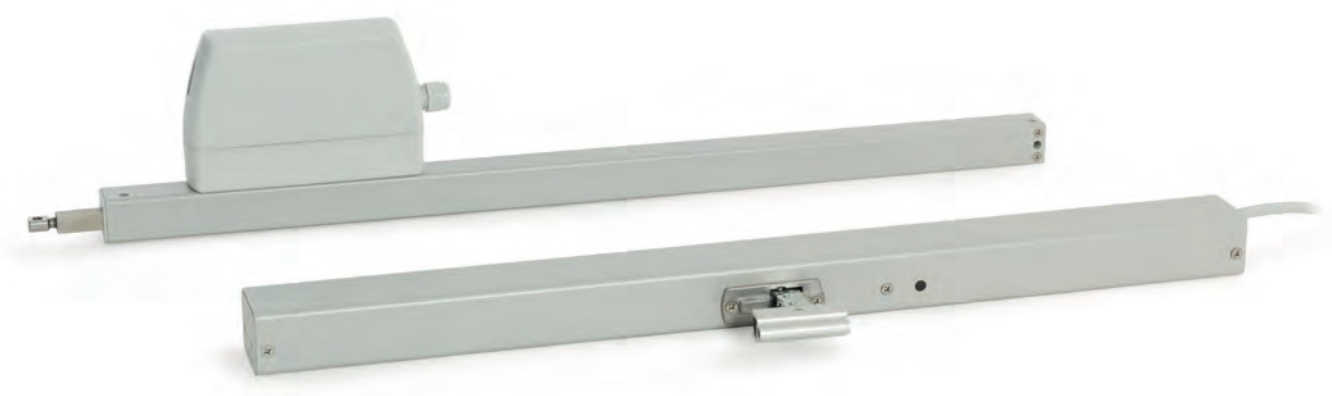
Assignment of protective measures

Protective measures are all the measures that reduce risk. Different protective measures are needed to minimise risk, depending on what risk is present. There are no standard protective measures for the use of power-operated windows in buildings. If power-operated windows are used in buildings, a building-specific risk analysis must always be performed to identify effective and cost-efficient solutions! Protective measures can be assigned to the protection classes shown in the table below.

The required protection class is achieved by applying one of the measures identified there. However, that measure must be suitable for actual use involved. Measures can also be combined. Measures in a higher protection class also cover a lower protection class.

Examples of protective measures

Protection class 0	• No protective measures required
Protection class 1	• Warning notices
Protection class 2	• Access is made safe with constructional measures or • Rounded, padded edges, closing force of 80 N to 150 N, no shearing effect or • Audible warning signal or • Warning lights or • EMERGENCY-OFF switch on the window or • Non-fixed devices in front of the window that prevent access to it
Protection class 3	• Dead-man's control without higher-level central control system or • Movement is stopped 25 mm before the end position over a period of 10 s. Triggering of an optical or audible signal. Further movement with signal up to end position or • Slower sash movement, max. 5 mm/s or • Access width less than 8 mm or • Rounded, padded edges, low closing force (less than 80 N), no shearing effect
Protection class 4	• Safety achieved by touch-activated safety equipment, e.g. safety edges, contact sensors or • Safety achieved by a contactless active safety device, e.g light barriers, light grid or • Dead-man's control with authorised operation of each window without a higher-level central control system (e.g. key button) or • Access width less than 4 mm or • Sccess is prevented by constructional measures



Solutions from D+H

All protective measures can be implemented with D+H drives. A wide variety of protective measures can be achieved even with the standard version. Additional options can be fitted to cover an even greater range of protective measures. These options are available for many D+H drives.

Warning notices:
Every D+H drive has a warning label that must be attached to the power-operated window.

Closing force 80 N to 150 N:
The closing force of most D+H drives (apart from ZA, DXD and CDP drives) is limited at the factory to 150 N over the last 100 mm of travel. The running speed at this distance is also reduced to 5 mm/s. These parameters can be adjusted in the D+H software SCS.

Audible warning signal (option -AS2):
The drive is fitted with a 2.3 kHz signal emitter. An audible signal is emitted for the duration of the stroke while a window is closing. Cycle timing: 0.5 s pause and 0.5 s signal. The volume and the cycle timing can be adjusted in the D+H software SCS.

Warning lights:
A warning light can be connected either directly to the drive, or to the drive's clamping unit. It produces a visible warning signal during the entire closing process.

Dead-man's control:
At the factory, all D+H control panels are set to be key-operated. In other words, the drives only run when the ventilation button is being pressed.

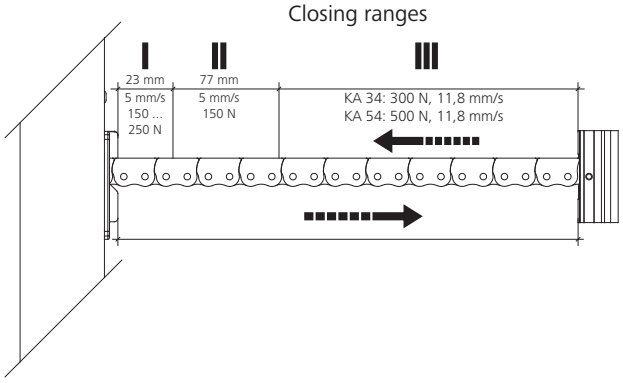
Stops the movement and generates an audible warning signal (option -AS3):
The drive is a fitted with a 2.3 kHz signal emitter. An audible signal sounds for 4 s before the window starts closing. The closing process starts after this. When the window is 25 mm away from its closed position, the drive stops for 11 s. At the start of this 11 s stopping time, an audible signal is emitted. This signal continues to sound until the window reaches its end position. The closing speed is reduced to 5 mm/s over this final 25 mm before the end position. The volume of the signal, and other parameters, can be adjusted in the D+H software SCS.

Slower sash movement:
The running speed over the last 100 mm in the CLOSED direction is limited to 5 mm/s in all D+H drives. This running speed is set at the factory. The D+H software SCS has settings for reducing this speed over the entire range of travel. This option can also be supplied as a factory setting by requesting "option -LS".

Safety provided by safety equipment (option -SKS):
Touch-activated or contactless active safety devices can also be attached directly to the drives or drive groups on all D+H drives that use BSY+ technology. Alternatively, a closing edge protection module can be installed in front of the drive to which the safety device is connected.

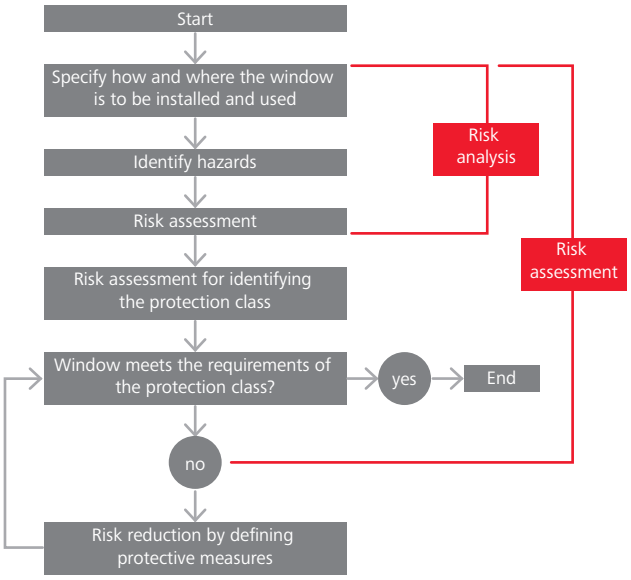
Dead-man's control with authorised operation:
All D+H drives can also be operated by key vent buttons, which also prevents them from being opened by unauthorised persons.

Security provided by the D+H presence detector

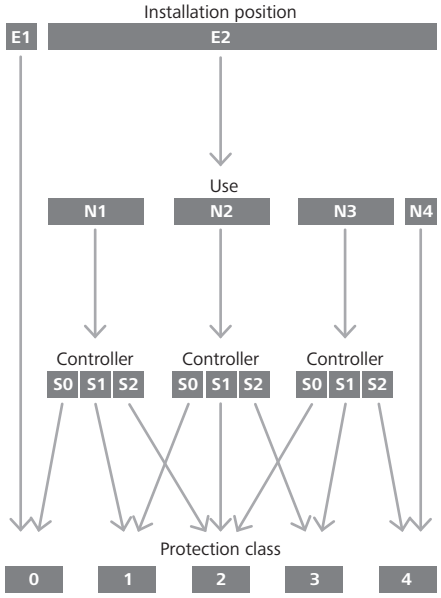


Running speeds and forces for KA 34 / KA 54

Risk assessment



Determining the protection class



Risk assessment

Example installation	Risk Level	Risk Parameter
a) installation height of lower edge of sash is at least 2.5 m above the floor or fixed access level b) fixed objects installed in front of the window to prevent access c) window sills or ledges that prevent users from having free access to the window	-	E1
Installation height of lower edge of sash is less than 2.5 m above the floor or access level, and window is easily accessible	++	E2
Room use		
Rooms that are used for commercial purposes, whose users know how to use this window technology (e.g. office space, industrial halls)	-	N1
Living areas, whose users know how to use this window technology, or rooms whose users/visitors can judge the risks and react accordingly	o	N2
Rooms used regularly by people who are not familiar with how to use window technology safely and cannot receive training in how to do so (e.g. sales rooms, events rooms, etc.)	+	N3
Rooms used regularly by vulnerable people or people who are unable to assess the risks (e.g. nursery schools, schools, hospitals, etc.)	+++	N4
Control/operation		
Manual operation without self-locking mechanism (dead-man's control), where all windows can be clearly seen (e.g. use of a key vent switch)	--	S0
Manual operation with self-locking mechanism where all windows can be clearly seen	-	S1
Automatic operation (e.g. wind/rain controller, building management system) or manual operation without a clear view of all windows	++	S2

MEANING OF SYMBOLS: -- very low risk | - low risk | o average risk | + high risk | ++ higher risk | +++ very high risk

REFERENCES: Parts of the data sheet correspond to a publication issued by the ZVEI ("Zentralverband Elektrotechnik- und Elektronikindustrie e.V.", known in English as the German Electrical and Electronic Manufacturers' Association).

Basic knowledge of CPS-M

Introduction

The CPS-M is a modular SHEV system, which is used for the smoke and heat exhaust ventilation of a building in the event of a fire.

The CPS-M makes use of fire detectors or is operated by SHEV operation panels in order to activate motorised drives and open existing windows for natural smoke extraction.

Components

Four different modules are used for the implementation of the individual tasks and to provide different interfaces …

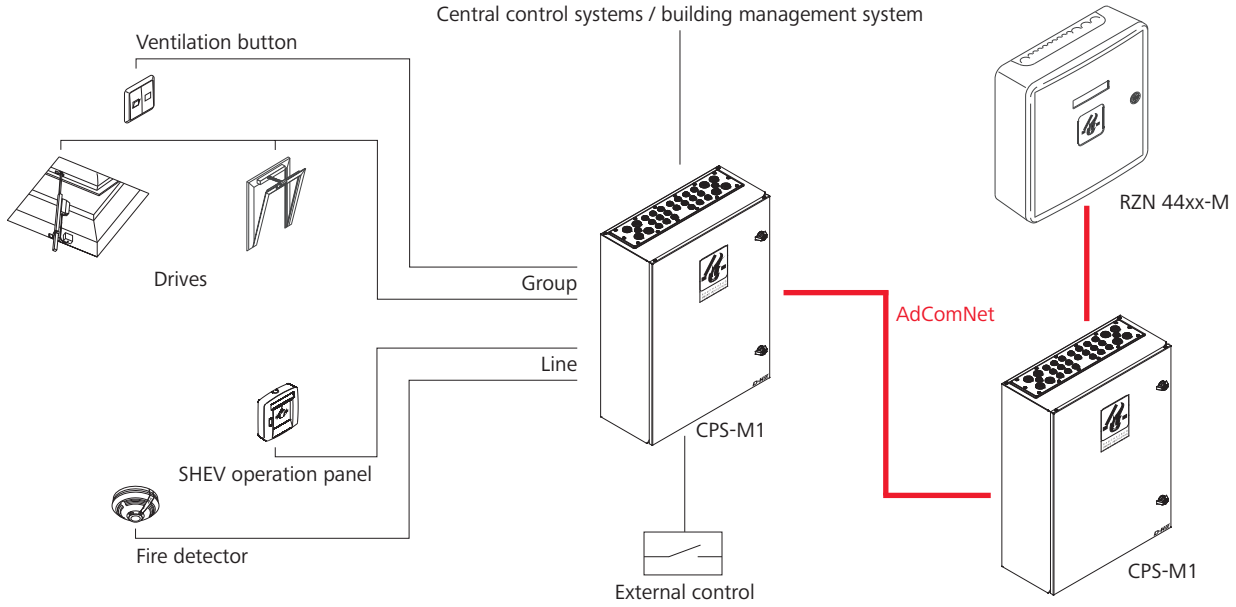
- The controller module is responsible for the internal communication of the control panel as well as for communication to other control panels and only one is required per control panel.
- The supply module is used to power the control panel via an external power pack and is also responsible for charging the emergency power battery. Depending on the overall performance of the system, the number of components required for a control panel can be scaled.
- The drives and ventilation buttons are connected to the actuator module. Depending on the number of drives and the separately assigned fire compartments, the number of actuator modules can be adjusted at any time.
- The fire detectors and the SHEV operation panels are connected to the trigger module. Here, the number of modules must also be adjusted to the quantity of fire detectors and SHEV control panels as well as the separately controlled fire compartments.

… which can be plugged into 3 different module sockets.

- The basic module socket serves as a connection for the controller module and the first supply module of each CPS-M control panel to other modules used by the control panel.
- The expansion module socket is used for the actuator module as well as for the trigger module, in order to expand the system piece-by-piece.
- The supply module socket takes over the task of integration for the supply module and handles the separation of individual control panel sections on the supply level.

While the modules themselves handle the individual tasks of the control panel, the module sockets are used for installation on the TS 35 top hat rail. In addition, the integrated connectors ensure power supply and communication. Other assemblies such as the temperature sensor or the bus termination module are required to ensure the safe operation of the control panel.

Example of application



Operation

When using SHEV, the CPS-M is operated via the mentioned SHEV operation panels in order to open windows in combination with D+H drives at the highest possible speed. Drives from other manufacturers can be connected and operated as well, although not in high speed mode.

Additionally, the CPS-M has a comfort ventilation function, with which windows can be used for natural ventilation purposes. Here, speed is optimised for a particularly low noise emission. Commercially available ventilation buttons are used for operation.

The touch panel in the CPS-M housing can also be used to display the status of the system and the individual statuses of the inputs and outputs, as well as to perform basic functions. The controlled operation of the system is also possible without a touch panel. In this case, the control panel is operated using interfacing buttons and control points.

Module arrangement / defining a control panel section

For the most part, the modules can be arranged freely. Be aware of the load on the individual sections of the control panel. These sections are rearranged due to additional supply modules in combination with a power pack. The controller module and the first supply module are positioned first and based on the system design. Actuator and trigger modules can then be freely positioned. We recommend that you adhere to the path of lowest load and, if possible, place the utilised actuator modules at the respective supply modules of the control panel sections.

Configuration

The assignment of the different fire compartments and the associated allocation of the actuator module group to the trigger module line as well as the assignment and use of the available digital inputs and outputs, for example as ventilation buttons, are configured via the SCS software tool.

In the SCS tool, different settings can also be selected for the individual modules with regard to behavioural patterns. In a network consisting of several control panels, a single point can be used to apply the configuration to all participants, including control panels or ACB (Advanced Communication Bus) drives.

Functions

The functions of the individual modules are also set in the SCS tool. For example, in the case of the actuator module, the storage operation in the OPEN and CLOSED direction can be set separately for each motor output.
The digital inputs and outputs can be integrated into SHEV or natural ventilation operations and equipped with functions. Depending on the link being used, different functions are available for selection.

Actuator types

In the actuator module, the actuator type can also be selected. You can select between reverse-polarity drive and ACB drive.

In combination with ACB drives (and their bus technology), the CPS-M can interact with the drive and use its information for better and more secure operation. All ACB drives are monitored separately from the control panel via bus communication. This also enables cable monitoring to the drives and use of the terminal module is unnecessary.

In addition, when the reverse-polarity drive actuator type is selected, it is possible to activate a required stop-hold function required for drives of other manufacturers. This prevents unintentional movement of the drives under load when disconnected from a power supply.

NOTICE/INFORMATION: When the stop-hold function is used, cable monitoring in accordance with EN 12101-09 can not be guaranteed.

None of the drives available from D+H require the described stop-hold function.

NSHEV made simple

Application areas for EN 12101-2

Natural smoke and heat exhaust ventilators (NSHEV) are installed to divert hot flue gases in the event of a fire to ensure that there is a smoke-free area near the floor and in escape routes. Since September 2006, EN 12101-2 is to be used for all NSHEV. This standard defines the requirements and test methods for NSHEVs.

A NSHEV consists of the following components: a motorised drive with corresponding components (bracket, fittings), the filling (glass, panel) and the SHEV opening with corresponding components (profiles, seals, fittings) in the façade or roof.

An approved NSHEV has passed the following individual tests:

- Opening time ≤ 60 s
- Aerodynamically acting surface
- Functional safety
- Snow load
- Wind load
- Low ambient temperatures
- Resistance to heat

The tested components must not be replaced with other components.

The tested NSHEV can be recognized by the CE marking:

RES RA 1472 1523 - ZA 24 V						
CE	SL1000	Aa 1.044	Av 1.885	B300-E	Re1000+Le10.000	WL1500	T(00)
1368-CPR-C-7080	EN 12101-2:2003		22505-2		42/2018	
D+H Mechatronic AG						

The path to the CE marking and certificate of constancy of performance of the NSHEV

The CE marking of SHEV products requires a defined testing process for the product and manufacturing plant.
The required steps for issuing the certificate are:

1. Application to a notified testing centre of D+H
2. Testing according to the specified performance classes
3. Application for issuance of a certificate of constancy of performance
4. Setting up a Factory Production Control (FPC)
5. Receive of the certificate of constancy of performance

D+H Euro SHEV manufacturer partnership

D+H Euro SHEV is a one-of-a-kind and optimum solution for manufacturing a NSHEV. The profile system is tested and certified for this purpose in connection with the D+H drive systems. The window manufacturer uses these system tests.
To manufacture NSHEVs in accordance with EN 12101-2, the D+H partners and the window manufacturers work together as follows:

1. The D+H partner calculates a NSHEV based on the respectively valid certificate of constancy of performance.
2. The window manufacturer produces the window, taking into consideration and adhering to these specifications as well as the respectively valid manufacturer guidelines and administrative regulations of the profile system in use.
3. The window manufacturer ensures there is an in-house Factory Production Control (FPC).
4. The window is installed in the object by the window manufacturer in accordance with the processing instructions of the profile system manufacturer.
5. The window manufacturer attaches the CE marking issued by the D+H partner on the NSHEV.
6. The D+H partner annually checks the processes displayed in the FPC in the plant of the window manufacturer and creates an audit report.

Overview of advantages:

- Maximum safety with renowned test institutes (VdS, MPA and IFI Aachen)
- No additional costs for NSHEVs
- Widest range of EN solutions on the market
- Maximum planning security with Euro SHEV
- NSHEV calculations with myCalc, specialised software
- Creation of EN documents such as NSHEV specification, declaration of performance, CE label, EN test specification, EN instruction for use in 17 languages
- Numerous certified specialist companies (Euro SHEV partners) are also near you

Conventional SHEV window

No additional costs for D+H products !

NSHEV in accordance with EN 12101-2

Basic knowledge TSZ-200

Introduction

The TSZ-200 is a control panel that was developed for controlling, monitoring and supplying power to alarm devices in systems for preventing the spread of smoke, heat and fire. It can also be used for automated smoke extraction and as a ventilation system in residential buildings. The power supply functions of the TSZ-200 comply with the standards EN 12101-10 and EN 54-4.

The TSZ-200 is planned according to customer specifications. The equipment and design options are based on the specific fire scenario.

Components / Functions

The TSZ-200 can be used to supply power to devices designed for 24 V DC, 230 V AC and 400 V AC operation.

The controller handles extinguishing processes and ventilation functions that have been programmed based on a CFD simulation, fire scenarios or directives for implementing ventilation systems. The control panel operates with inverters that have a nominal power of up to 75 kW. This enables a soft start-up and infinitely variable adjustment of the fan speed. These features make use of advanced control algorithms, such as using the fan in reverse operation or variable fan speeds that are controlled by the reporting system. For less sophisticated systems, the control panel supports star-delta start-up switching or direct start-up.

There is also an option to equip the device with an emergency power supply. This type of system automatically responds to any power supply interruption and thus does not rely on the building's power supply system.

The TSZ-200 supports the Modbus RTU and Modbus TCP/IP protocols. This means that the status signals of the individual devices and the control signals for residential functions can be exchanged between control panels. In addition, this allows for communication with the central visualisation station and the building management system.

It is possible to use a joint LCD display (3.5" - 15" touchscreen) in order to show the operating status for multiple control units in the building. This display is required for expanded systems consisting of multiple TSZ-200 units. This makes it possible to visualise the entire system.

Application

This TSZ-200 is normally used in large-scale buildings. Thanks to the control panel's modular structure, it can be used in a wide variety of facilities.

- Underground car parks
- Multi-storey car parks
- Large-volume buildings
- Street tunnels
- Evacuation routes that run horizontally
- Industrial and production plants
- Shopping and logistics centres
- Power plants and heating systems

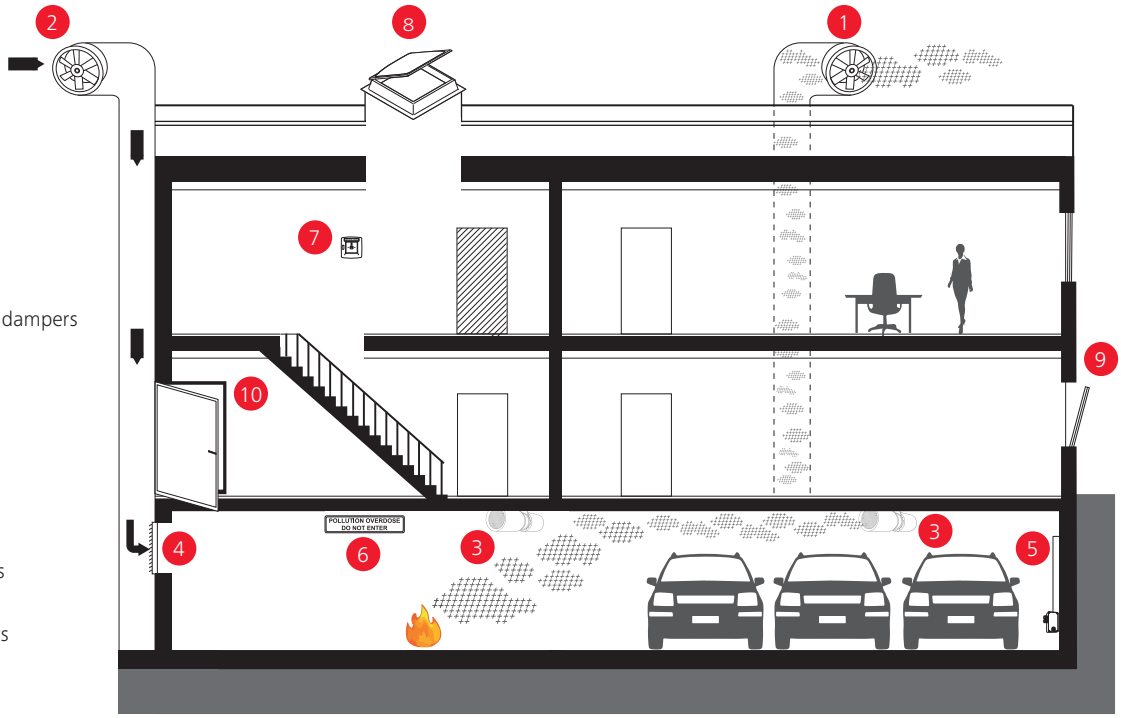
Possible system components

The following system components can be used in conjunction with the TSZ-200:

- Fire extinguishing, supply air and residential room ventilators up to 75 kW (with different start modes)
- 24 V DC or 230 V AC fire protection flaps
- 24 V DC or 230 V AC control flaps
- 24 V DC or 230 V AC linear or rotating electromechanical actuators
- Fire detectors or manual smoke vent buttons (D+H)
- Other components used in automatic ventilation system devices for fire and residential spaces

Example of application

1. Smoke exhaust fans
2. Air inlet fans
3. Jet fans
4. Smoke exhaust and fire dampers
5. CO/LPG detectors
6. Warning signs
7. Push buttons
8. Smoke exhaust dampers
9. Smoke exhaust windows
10. Air inlet doors/gates



Planning options

Option 1: Natural smoke and heat exhaust ventilation
The TSZ-200 detects a fire and activates smoke redirection flaps and windows as well as ventilation flaps in the staircases.

Option 2: Automated smoke vent system
Fire has been detected, for example, in an underground car park. The TSZ-200 activates the fans for smoke exhaust and ventilation as well as the jet fans. In addition, the control panel controls the supply air gate operation.

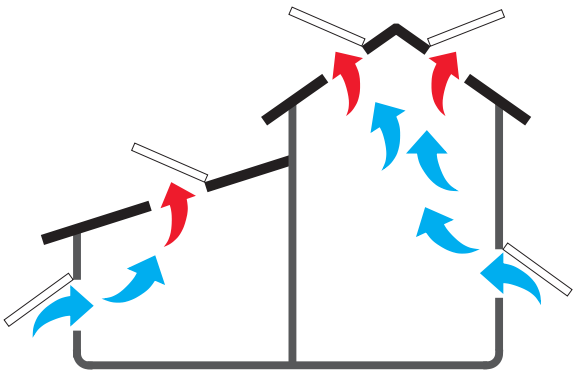
Option 3: Ventilation application
A liquid gas and carbon monoxide sensor reports increased gas concentration. The TSZ-200 activates the jet fans, switches the warning signs and opens the supply air gates.

Ventilate: But how?

Healthy climate - quite naturally

With controlled natural ventilation, you can control your indoor climate simply by using natural, freely available energy sources and thermal effects. This method is simple, inexpensive and effective. Opening the windows also creates a particularly healthy and comfortable indoor climate.

Operating principle of controlled natural ventilation



The ventilation is controlled depending on the respective requirements regarding temperature, air hygiene and energy. Intelligent control systems evaluate the prevailing weather and room air conditions, such as the temperature, humidity and carbon dioxide content in the room, plus the outdoor temperature, wind velocity and precipitation.

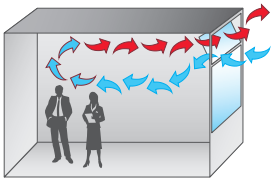
Motorized opening of windows generates a targeted exchange of warm, stale indoor air and fresh outdoor air by means of the difference between indoor and outdoor temperatures, the thermal lift in the room and the wind conditions surrounding the building.

The three basic principles of controlled natural ventilation

Controlled natural ventilation can be achieved in various ways:

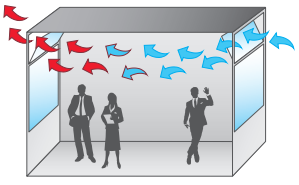
Unilateral ventilation

In the case of unilateral ventilation, windows are to be opened on only one side of the room. The extent of the air exchange is limited, therefore this is used for smaller rooms that can fit a low number of people.



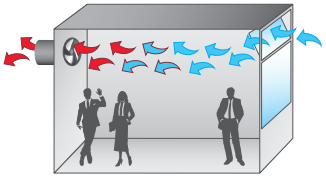
Cross ventilation

Cross ventilation is achieved through windows in two or more outer surfaces by pressure differences at the façades caused by wind. It enables optimum air exchange even in larger rooms with greater depth.



Hybrid ventilation

Hybrid ventilation refers to the combination of motorized windows and an exhaust fan. It is used where ventilation is required even under difficult climatic conditions.



The state-of-the-art alternative to mechanical ventilation

With intelligent control systems and window drives from D+H, you can create a customised indoor atmosphere that is pleasant and comfortable. Fresh air enters the building as needed and stale air can escape.

- Optimum air exchange and a healthy indoor climate, even outside of the usage times
- Prevention of damage from humidity and mould formation by continuously dissipating the moisture
- Cooling at night of the building's heated thermal masses as needed in the summer months
- Prevention of overly dry and poor air, which frequently causes health problems in the case of mechanical ventilation (sick-building syndrome)

Controlled natural ventilation is an extremely environmentally friendly, healthy and inexpensive alternative to mechanical ventilation.

Overview of advantages:

- Lower investment costs, significantly lower costs for system technology
- Lower costs for maintenance and repairs (maintenance-free technology)
- Lower energy consumption (No active cooling and fans)
- Shorter construction times thanks to fast installation and commissioning
- Significantly lower space requirements (no distribution shafts and ducts)
- Lower CO_2 emissions

AdComNet - The reliable SHEV bus

Convenience and reliability intelligently combined

AdComNet (Advanced Communication Network) is the bus technology from D+H, with which you can integrate decentralised standard SHEV control systems into smoke extraction and ventilation concepts which can be programmed easily and flexibly. The modularly designed network technology is the first VdS-certified bus system for SHEV on the market.

A complex smoke vent scenario, controlled easily and reliably

With AdComNet the conventional control panels can be linked to enable complex scenarios for opening and closing windows or other ventilation equipment, depending on how the room is being used. Smoke vent example: If a fire breaks out on one storey, the closed windows on that storey open immediately and conduct the hazardous fire smoke out of the building. On the remaining storeys unaffected by the fire, AdComNet closes the open windows to prevent toxic combustion gases from entering. The closed windows in the stairwell are also opened automatically, to keep this escape route free of smoke. By dividing the bus system into independent segments, the individual fire compartments remain functional even if there is a break in communication.

AdComNet: modular and flexible

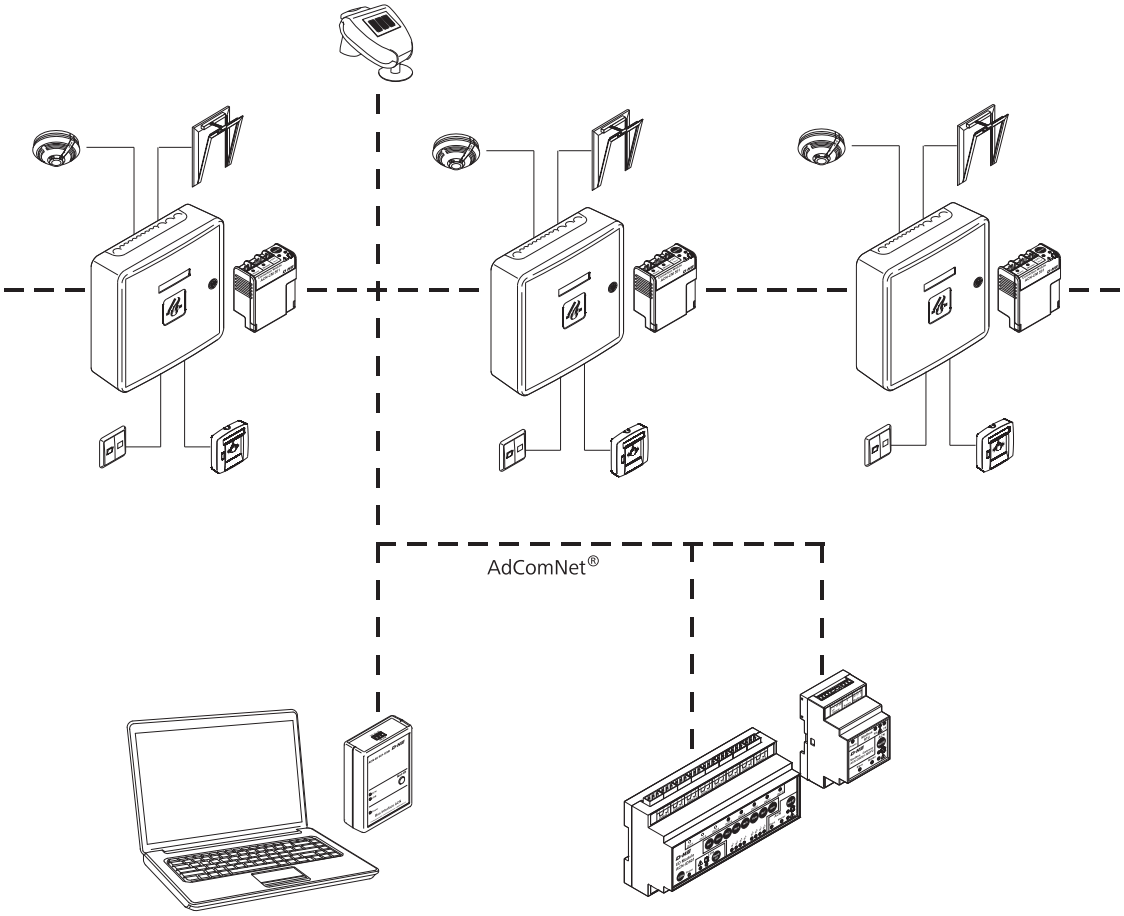
The modular and decentralised bus system has been designed as a long-term economical solution for all types of buildings in which not only SHEV systems, but also natural ventilation systems are used. Since the bus system is easy to reprogram if the room will be used differently, AdComNet is ideal for building types with sophisticated requirements for SHEV and ventilation, such as buildings with multiple storeys and fire compartments (office and administrative buildings, schools, places of assembly, production facilities etc.).

The system can be expanded or adapted at any time, either while it is being installed and set up, or during later conversions or retrofits. Smoke compartments, load and zone groups as well as the corresponding field devices can be reprogrammed without changing any cables. No need for laborious and expensive new installations and cabling.

Overview of advantages:

- Large savings potential thanks to lower cabling effort, significant reduction of cable cross-sections and lengths
- Only a tenth of the usual power consumption per node item, thanks to low-power technology
- Cost savings when designing and dimensioning the SHEV controllers thanks to a reduced need for battery power and size
- No special power supply required in the event of a mains outage; initial states are kept
- No need for special system integrators

Example of application



Basic knowledge of ACB

What is a bus system?

Generally, a bus is a system for data transfer between several nodes over a shared transfer path. Today, there are all different kinds of bus systems, such as in cars (CAN bus) or in smart homes (KNX, LON, BACnet etc.). In most cases, the most important nodes in a smoke extraction and ventilation network are a building technology system, the window drives and the control panels. Protocols are used as transmission paths in order to meet the requirements for system-internal, secure and stable communication. These protocols can be transported either by way of a radio signal or a cable. The individual devices can "talk to each other", i.e. exchange information, by determining one of these protocols as the type of information exchange. Before the alarm has even gone off, the rolling shutters slowly move up. Sunlight falls into the room. In the kitchen, the coffee brewer starts up automatically. At the same time, the heating adjusts to a comfortable temperature in the bathroom and the television in the living room jumps to the latest news. All of this may sound like luxury or like futuristic thinking, but this has long been the daily routine in many households thanks to modern bus systems. Even large building complexes such as schools, offices or hotels are regulated by what is referred to as a building management system (BMS). Such systems are becoming more and more automated these days. In these systems, all "smart" devices communicate with each other in order to offer the user maximum comfort and convenience and to provide benefits in terms of energy.

For the ACB
planning manual

Modbus: A common language among the transfer protocols

Over time, a wide variety of transmission systems have been developed by various manufacturers. On an international level, though, only some of these systems meet recognised standards. One of the protocols that meets international standards is Modbus RTU. It is an indispensable element in industrial communication, but it has also arrived on the scene in international markets in the “living” sector. Many applications and devices are equipped with a Modbus interface. Modbus is easy to integrate thanks to its relatively simple structure and is highly stable compared to other systems. Therefore, it is a language that is ideally suited for building management systems. Gateways, as they are called (D+H gateway is the ACN-GW501-MRTU-0200), are used in buildings where other bus systems, such as BACnet or KNX, take over control of all technical functions. They translate the other information languages into the common Modbus protocol - in that respect, there is no language that Modbus cannot speak. You could say that Modbus is the English, that is, the universal language of transmission protocols. Based on the advantages of this system, D+H decided to structure their ACB technology around the open Modbus RTU protocol.

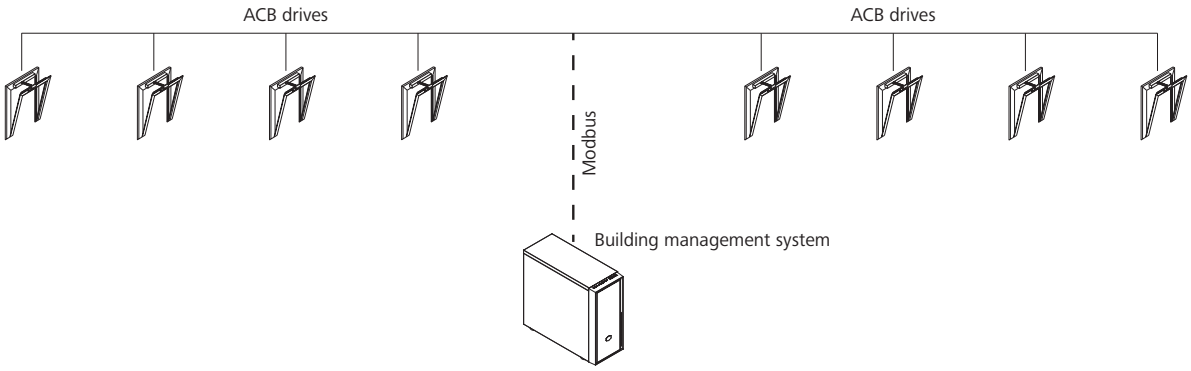
The windows speak ACB

Using Advanced Communication Bus (ACB), the newly developed bus system by D+H, window drives can now also be integrated directly into existing building automation. This way, windows open and close fully automatically depending on the weather and ambient air conditions.
Using building management systems (BMS), ACB drives can only be operated in ventilation mode. The use of smoke vent (SHEV) functions such as high-speed requires the integration into the D + H digital smoke vent control panel (CPS-M). ACB is based on the open Modbus RTU protocol, making integration into a BMS playfully simple.

Correct and secure planning

For project planning, it is important right at the start to know how many windows and thus how many drives are required for the project. The number of Modbus slave drives per Modbus master is limited to 32 nodes. This ensures virtually delay-free drive communication. The reason for the limitation of the number of drives is the maximum cable length in the Modbus system of 200 m. Since each drive has connection power of approx. 2 m, this adds up to 64 m of cable length for 32 drives. This means that there is a length of 136 m remaining. However, at an average distance of 4 m between two windows, a further 128 m (4 m x 32 m) is added to that 64 m, which together comes out to a cable length of nearly 200 m.

Added value of ACB drives



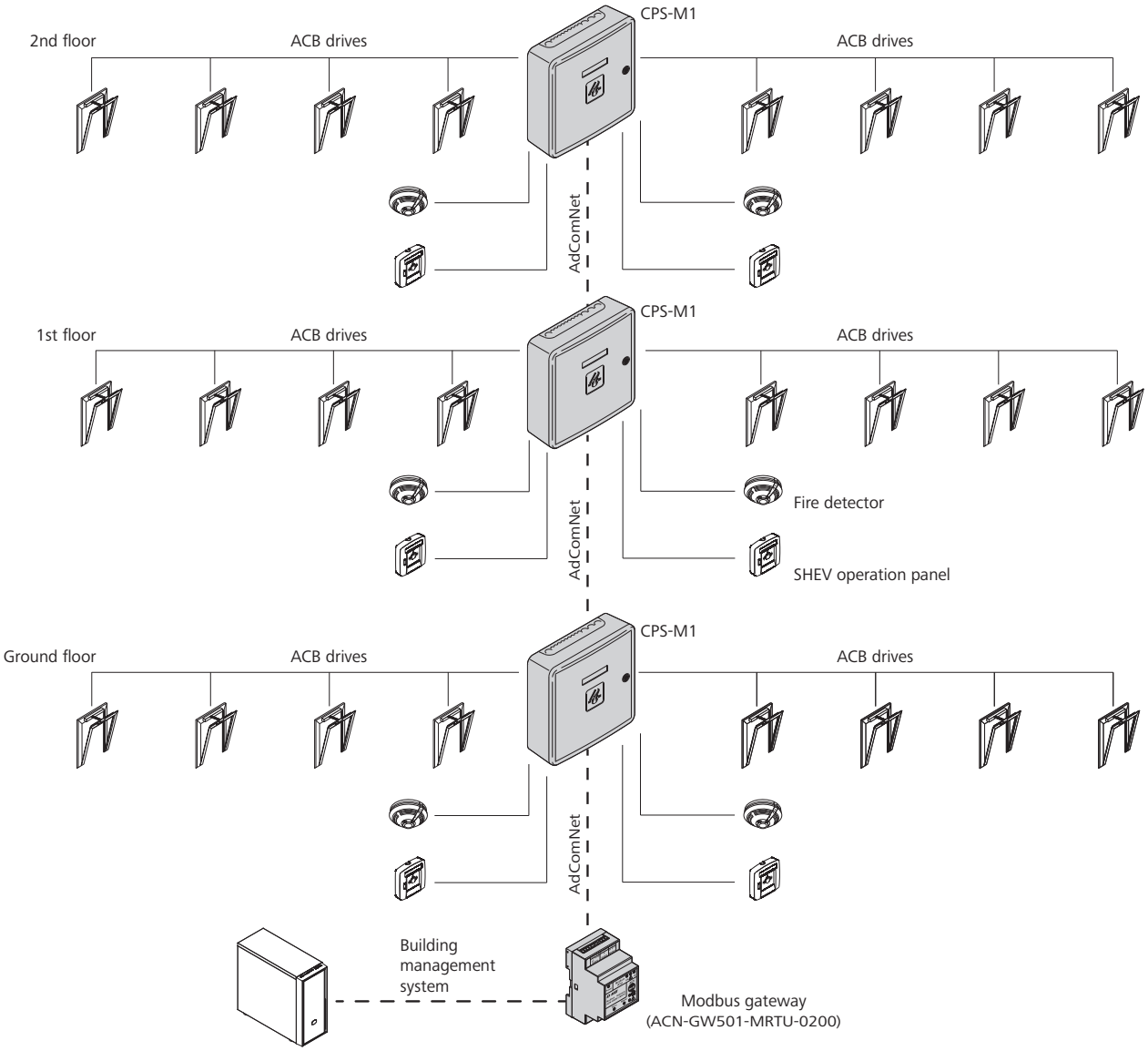
Programming made easy

We have explained how ACB drives for ventilation purposes can be controlled directly by the building automation. But were you aware of just how precise this control can be? Control with perfect positioning is an aspect of the programming thanks to the building management system or the SCS software from D+H, for example. In the summer, do you want the windows to open 10 percent of the way to create a small gap? Or would you rather have them open 80 percent of the way to let a strong breeze air the building out? You can find all details relating to programming in the D+H planning manual.

Modbus RTU - Taking a look at the technology

The RTU after Modbus stands for Remote Terminal Unit. Why remote? This relates to the master/slave architecture of the Modbus RTU protocol. It works as follows: A device, such as the building management system, a computer or a touch display, takes over the master management function and sends instructions to the “remote” slave – for example, a D+H drive. This drive receives the signal and executes the instruction.

Networking between CPS-M and ACB drives



Live communication with the drive

- Bi-directional bus communication between D+H controllers and D+H drives
- Programmable using D+H controllers and D+H SCS Software using a PC or tablet with a Windows operating system
- Multiple drives can be combined to form a drive group and can run synchronously
- Highly accurate control allows the drive to be extended and retracted with precision down to the millimetre
- The ACB can be used to read out all status messages such as the exact opening stroke or the OPEN and CLOSED status

Approvals / Directives

The CE marking, the European Union product passport

The Construction Product Directive (CPD) was implemented in 1989 to remove trade barriers within the European Union. It was intended to ensure an uniform system for testing, certifying and subsequently classifying construction products. The new Construction Product Regulation has been in effect since March 9, 2011. You can read more about it below.

By using the CE marking for its products, the manufacturer declares compliance with all product-relevant European directives.
For electro-mechanical components for smoke and heat exhaust ventilation, these are the Low Voltage Directive (2014/35/EU) and the EMC Directive (2014/30/EU). Specifically for drives, the manufacturer also declares compliance with the Machinery Directive (2006/42/EC).
For building products which are subject to a harmonised European standard (e.g. EN 12101-10), the manufacturer declares and verifies that the products meet with the product performance listed in the declaration of performance when attaching a CE marking.

Difference between Construction Product Directive and Construction Product Regulation

The new Construction Product Regulation (CPR) took effect on March 9, 2011. Effective July 1, 2013, the old Construction Product Directive (CPD) has been fully replaced by the new Construction Product Regulation.

Due to its designation as a “regulation”, the new CPR is already being implemented automatically within the national law of the respective countries without requiring an additional national legislative act. This is one of the main reasons why a construction product regulation was implemented.

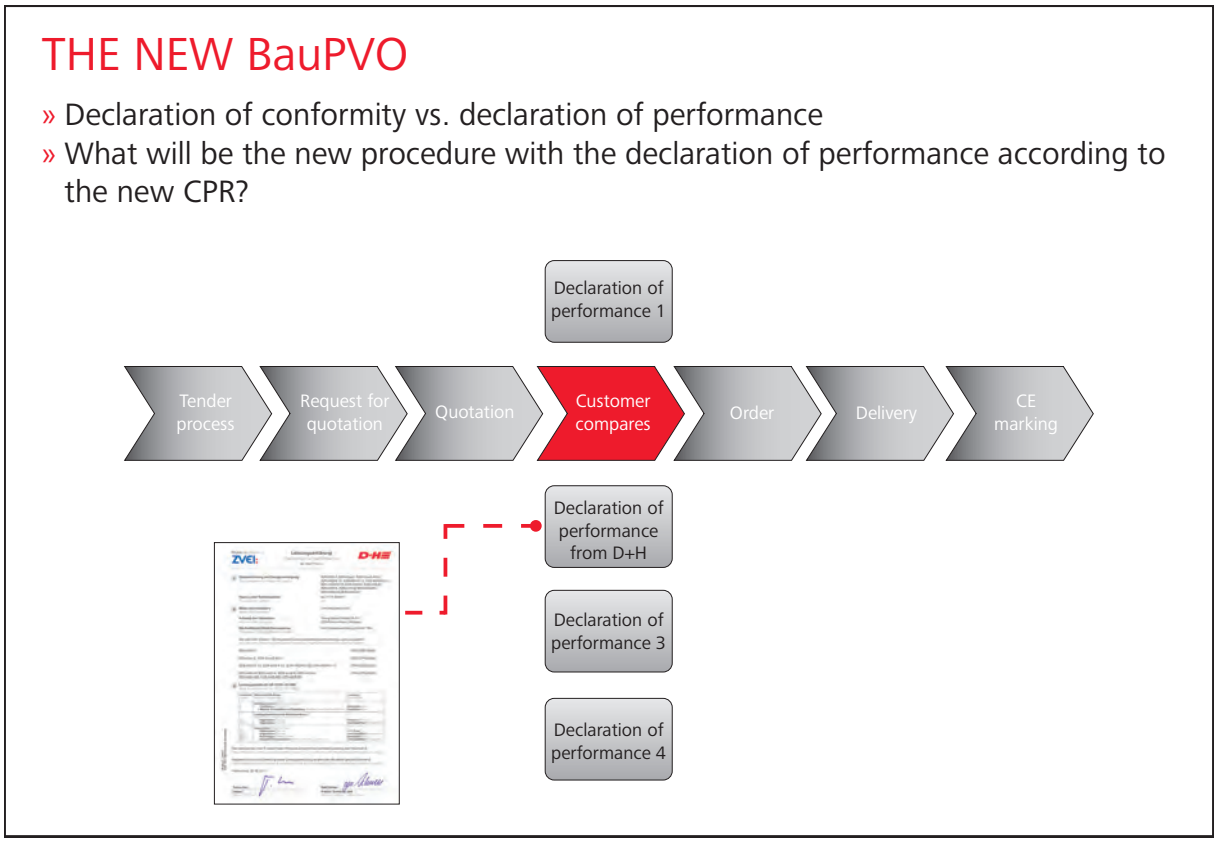
In contrast to the old CPD, the manufacturer declares conformity of its product with all product-relevant European directives and conformity to their own issued declaration of performance since the mandatory enforcement of the CPR.

In contrast to the old CPD, a manufacturer must specify a performance value for only one essential feature in accordance with the new CPR. For all other essential features, manufacturers can declare n.p.d (no performance determined). Also, according to the CPR, manufacturers can choose which essential feature they provide information for.

Example: A NSHEV has the fundamental task of ensuring smoke extraction from hot combustion gases through an area measured in aerodynamically precise form. However, a manufacturer is not required to specify an aerodynamic free cross-section or to have it checked. Instead, the manufacturer could theoretically only declare a wind load class of 1,500 WL, for example. We consider it useful and necessary to check and specify all features. This is the only way to ensure comparability of product performance features as well as safe planning and implementation.

"New" declaration of performance vs. "old" declaration of conformity

From the tendering and selection phase, the declaration of performance has a much higher significance than the declaration of conformity which had previously been submitted with the product.
One clear advantage of the declaration of performance is the fact that—similar to a refrigerator—the NSHEV's performance behaviour is declared in advance, and does not have to be confirmed starting with delivery of the product. The following figure clearly shows that the declaration of performance starts having an effect on the customer's selection early and is expected to be an essential supporting factor in the selection. Compared to the old declaration of conformity (which only comes into play during the final step in presentation), the new declaration of performance supports the selection and provides security.



Early impact of the declaration of performance according to the new CPR

What must the planner keep in mind?

The planner should pay attention to the completely filled-in declaration of performance when selecting natural smoke and heat exhaust ventilators (NSHEV). It gives the planner and manager the chance to compare the climatic and functional requirements imposed on the NSHEV. A comparison is impossible without specifying numerical values and it is doubtful that a product tested in such a way really conforms to requirements.

In conclusion, the new Construction Product Regulation provides the clear advantage of better comparability based on the condition that all features must be demonstrated with numerical values. A product (such as a NSHEV) with a declaration of performance filled in completely with reasonable number values represents today's standard of quality.

D+H, along with an international network of D+H subsidiaries and D+H sales and service partners, offers a wide range of natural smoke and heat exhaust ventilators (NSHEV) that have been fully tested in accordance with EN 12101-2 and meet all architectural requirements, even with asymmetrical NSHEVs.

D+H is active

D+H has played a very active role in the development of national standards and directives as well as European and international (global) standards since 1996. We want to ensure that the level of safety that we have known and accepted here in Germany for decades becomes a part of European and global standards as well. One result is the establishment of European standards (e.g. EN 12101-10, power supplies for smoke and heat exhaust systems), which are then to be used as mandatory, harmonised standards in Germany as EN 12101-10. Another result is the creation of global standards, which are then published as ISO standards (e.g. ISO 21927-10; power supplies for SHEV). These standards may then be used worldwide although there is no requirement to do so.

Overview of standards

DIN EN

DIN EN 60335-2-103
Requirements and test methods for drives for windows

DIN EN 12101-2
Requirements and test methods for natural smoke and heat exhaust ventilators (NSHEV)

Pr EN 12101-9
Requirements and test methods for control panels (draft)

DIN EN 12101-10
Requirements and test methods for power supplies

DIN 18232-9
Significant features and their minimum values for natural smoke and heat exhaust ventilators in accordance with EN 12101-2, for energy supply systems in accordance with EN 12101-10 and for control panels in accordance with ISO 21927-9

VdS

VdS directive VdS 2580
Requirements and test methods for electro-mechanical drives, for natural smoke extraction systems (NSE)

VdS directive VdS 2581
Requirements and test methods for electric control units for natural smoke extraction systems (NSE)

VdS directive VdS 2592
Requirements and test methods for electric manual control units for natural smoke extraction systems (NSE)

VdS directive VdS 2593
Requirements and test methods for electric energy supply systems for natural smoke extraction systems (NSE)

VdS directive VdS 2594
This standard regulates the interaction between the various products in accordance with the above-mentioned VdS directives. The result is a system approval for electric smoke and heat exhaust systems.

ISO

ISO 21927-2
Requirements and test methods for natural smoke and heat exhaust ventilators (NSHEV)

ISO 21927-9
Requirements and test methods for control panels (draft)

ISO 21927-10
Requirements and test methods for power supplies

UL

UL 325
This test standard defines, among other aspects, the requirements and test methods for electro-mechanical drives, which shall be used for ventilation purposes. The result of this test is a UR certificate.

GOST

GOST R 53325-2012
DOMESTIC STANDARD OF THE RUSSION FEDERATION. General technical requirements and test methods for fire automatization including natural smoke protection systems.

Test centres / test symbols

Dekra
Approvals for the electric safety/security of products (drives and control panels) - particularly regarding Low Voltage Directive approvals for drives in accordance with the EN 60335-2-103 standard.

VdS Schadenverhütung
Well-established as a test laboratory for fire protection technology in Europe.
Inspection of SHEV control panels in accordance with the standards listed below or VdS directives.
Named as a notified body by DIBt; inspections in accordance with EN 12101-2 European standards for natural smoke and heat exhaust ventilators and subsequent certification.
Inspection of electro-mechanical drives in accordance with the VdS directive VdS 2580.

I.F.I.
I.F.I. is a Notified Body pursuant to the Construction Products Regulation for natural smoke and heat exhaust ventilators (NSHEV) in accordance with EN 12101-2.

EN 12101-2
Drive tested in conjunction with NSHEV in accordance with EN 12101-2. See pages 16-17.

Underwriters Laboratory UL
Underwriters Laboratories (abbreviated UL) is an independent organisation which inspects and certifies products in terms of their safety. UL inspects products, components, materials and systems to see whether they conform to US and Canadian market requirements.

CNPP
The CNPP is a French test institution which conducts specific function checks for individual components or systems for SHEV facilities in accordance with French standards.

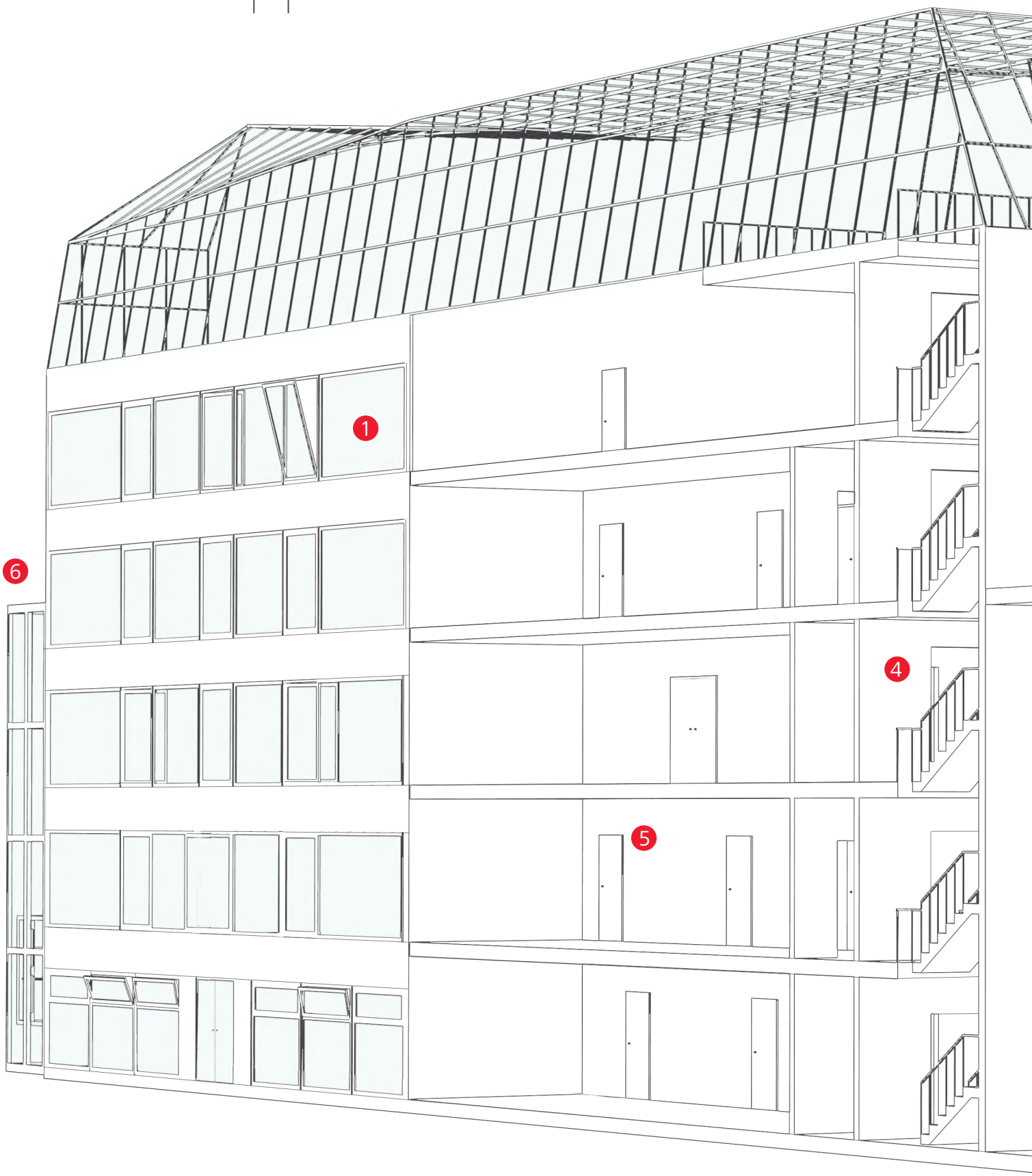
AFNOR
The AFNOR is a French test institution which issues country-specific certificates on the basis of tests conducted by the CNPP for components or systems of SHEV systems in accordance with French standards.

CNBOP
The CNBOP is a Polish test institution which conducts specific function checks for individual components or systems for SHEV systems in accordance with Polish standards and laws and which issues certificates based on these tests.

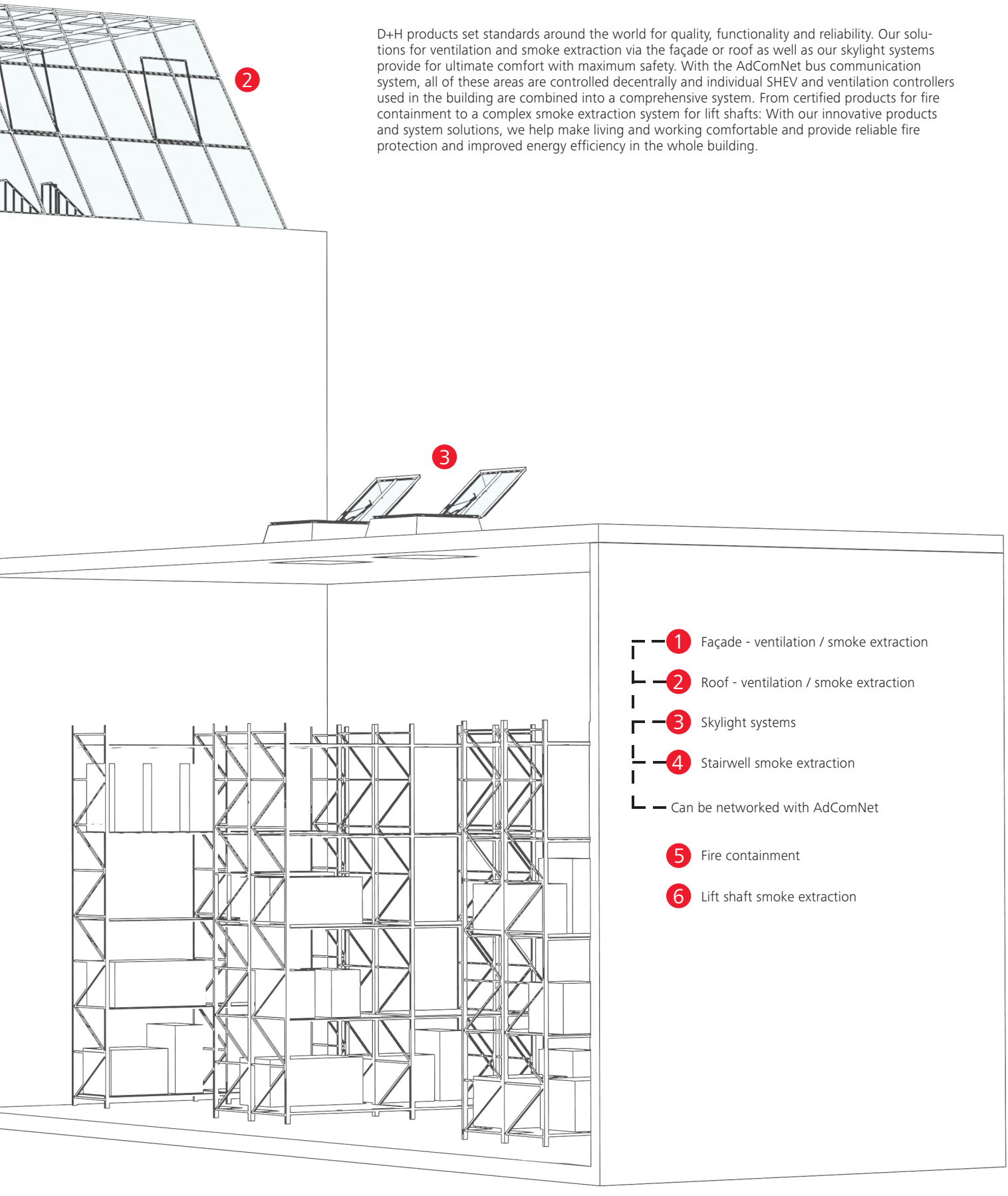
CCCF
The CCCF is a Chinese test institution which issues country-specific certificates on the basis of tests conducted at accredited Chinese test institutions for components or systems for SHEV systems in accordance with Chinese standards and laws.

OS POZHTEST FGBU VNIIPO EMERCOM
The institute is part of the system of the state fire department of the Russian Ministry of Disaster Management. It is the most important fire related research institute in the Russian Federation.

Possible applications



D+H products set standards around the world for quality, functionality and reliability. Our solutions for ventilation and smoke extraction via the façade or roof as well as our skylight systems provide for ultimate comfort with maximum safety. With the AdComNet bus communication system, all of these areas are controlled decentrally and individual SHEV and ventilation controllers used in the building are combined into a comprehensive system. From certified products for fire containment to a complex smoke extraction system for lift shafts: With our innovative products and system solutions, we help make living and working comfortable and provide reliable fire protection and improved energy efficiency in the whole building.



Possible applications

Façade - ventilation / smoke extraction

Convenience and flexibility done perfectly: Our window drives are suitable for virtually all window and façade solutions. Integrated in wood, aluminium or plastic profiles, our drives can be customised to meet the highest standards of architects, planners and processors. No matter whether the design is inward or outward opening or includes bottom, top or side-hung vents: D+H supports you during installation and supplies the necessary fastening materials.

Side-hung window, inward opening

Bottom-hung window, inward opening

Top-hung window, inward opening

Side-hung window, outward opening

Bottom-hung window, outward opening

Top-hung window, outward opening

Projected top-hung window, outward opening

Drawbridge application

Louvre window

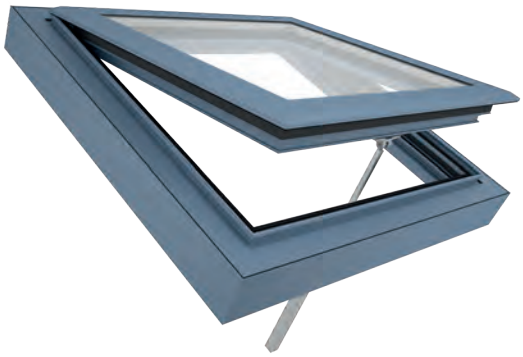
Parallel opening window, inward opening (BDT)

Parallel opening window, outward opening (CDC)

Trapezoidal application

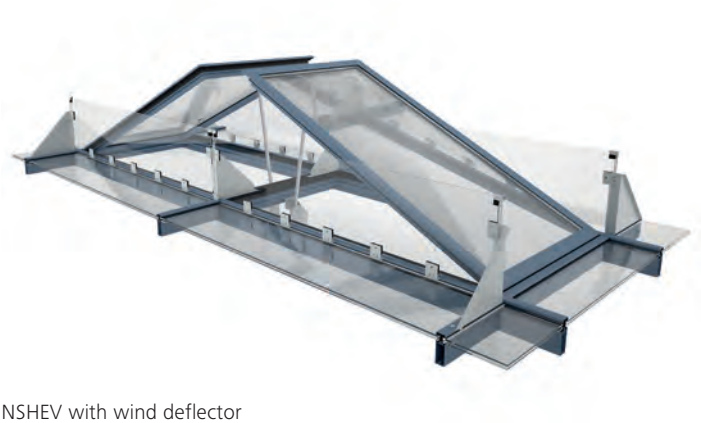
Roof + skylight systems - ventilation / smoke extraction

Efficient ventilation and safe smoke and heat exhaust ventilation in the roof area: Our slim and visually elegant high-performance drives from the CDP, ZA and DXD Series prove their worth in terms of design and function. Even the heaviest sashes open in a very short time. Our skylight systems also achieve outstandingly effective ventilation. These systems are fastened to U-brackets or pivot-point displacement brackets as well as to the SDS system, providing exceptionally large opening angles.



Roof window, outward opening

Skylight system



NSHEV with wind deflector

References

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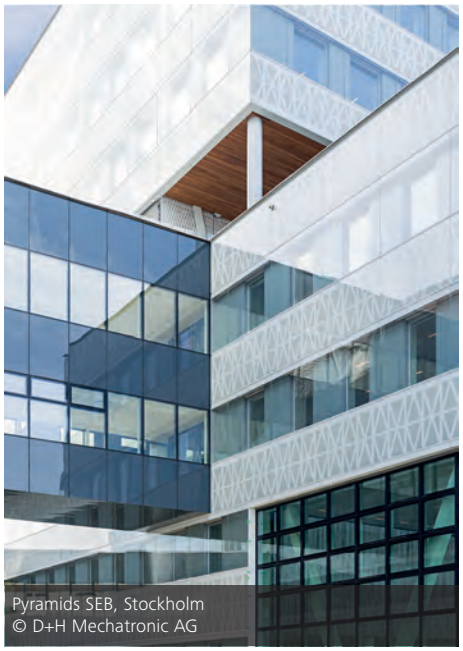

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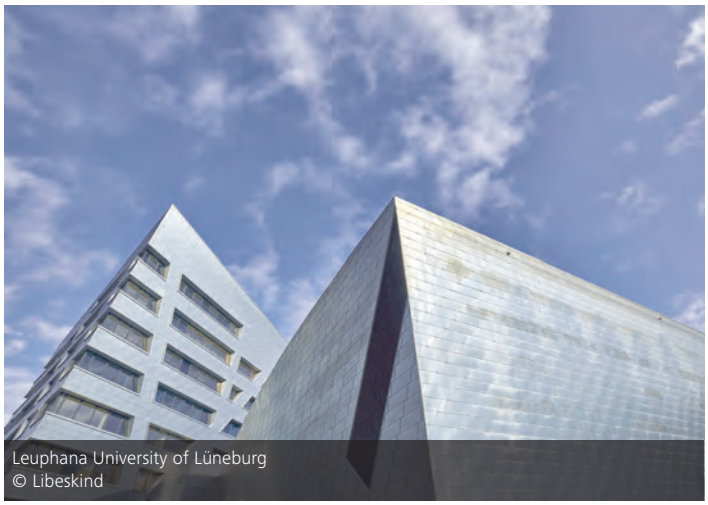

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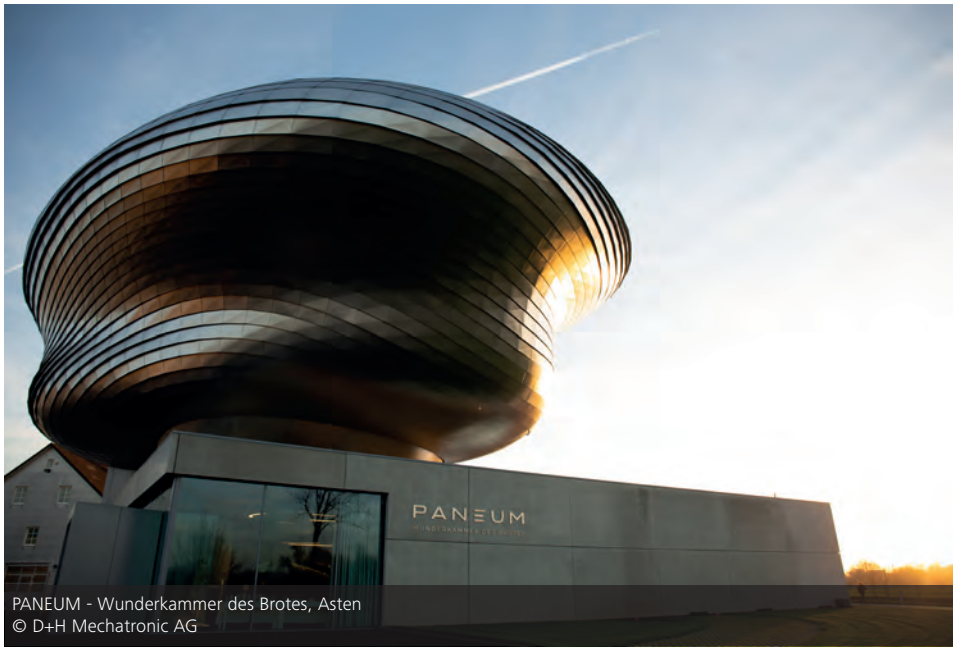

PANEUM - Wunderkammer des Brotes, Asten
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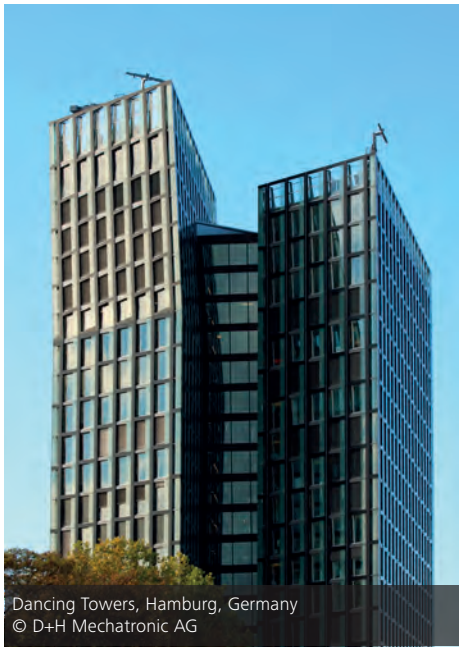
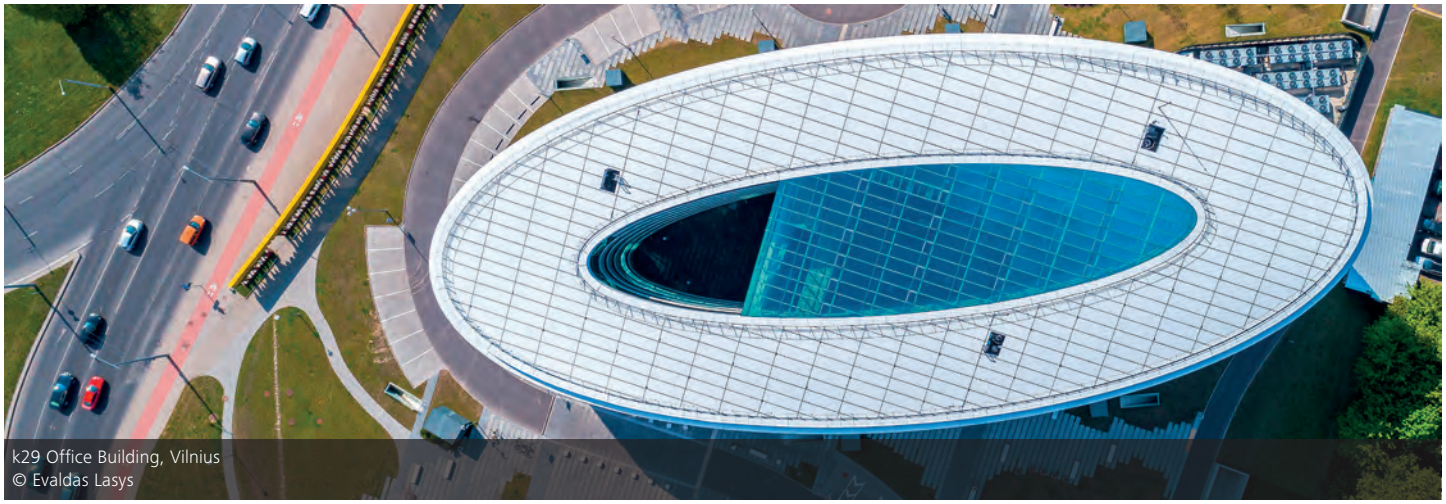


Dancing Towers, Hamburg, Germany
© D+H Mechatronic AG



k29 Office Building, Vilnius
© Evaldas Lasys

Chain drives

VCD Series Chain drives

Type	Supply	Max. force of pressure	Max. stroke	Page
VCD 203	24 V DC	200 N	250 mm	40
VCD-0203-1-ACB	24 V DC	200 N	250 mm	44
VCD 204	24 V DC	200 N	350 mm	48
VCD 204-TMS+ Set	24 V DC	200 N	350 mm	48
VCD-0204-1-ACB	24 V DC	200 N	350 mm	52
VCD 204-K	230 V AC	200 N	350 mm	56
VCD 204-K-TMS+ Set	230 V AC	200 N	350 mm	56
VCD-0204-5-ACB	230 V AC	200 N	350 mm	60

CDC Series Chain drives

Type	Supply	Max. force of pressure	Max. stroke	Page
CDC-0252-1-TMS+	24 V DC	250 N	800 mm	64
CDC-0252-1-ACB	24 V DC	250 N	800 mm	68
CDC-0252-5-ACB	230 V AC	250 N	800 mm	72
CDC-TW-0502-1-ACB	24 V DC	500 N	800 mm	76

KA Series Chain drives

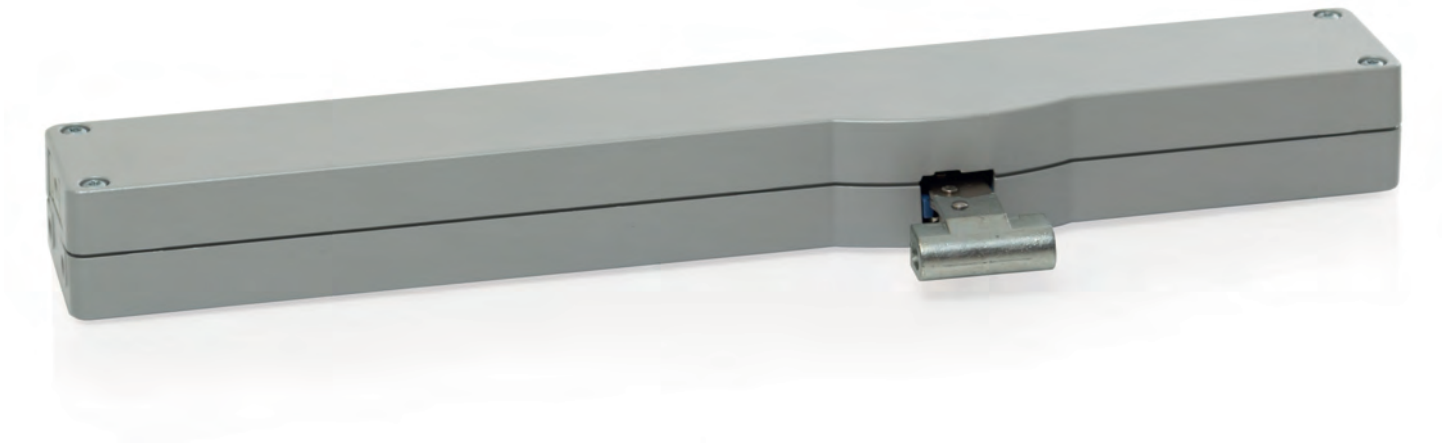
Type	Supply	Max. force of pressure	Max. stroke	Page
KA-PLP	24 V DC	300 N	1000 mm	80
KA-BSY+	24 V DC	300 N	1000 mm	84
KA-K	230 V AC	300 N	1000 mm	88
KA-K-BSY+ Set *	230 V AC	500 N	1300 mm	92
KA-TW-BSY+	24 V DC	600 N	800 mm	96
KA-TW-K-BSY+ *	230 V AC	600 N	800 mm	100

CDP Series High-performance chain drives

Type	Supply	Max. force of pressure	Max. stroke	Page
CDP-BSY+ *	24 V DC	1500 N	1500 mm	104
CDP-K-BSY+ *	230 V AC	1500 N	1500 mm	108
CDP-TW-BSY+ *	24 V DC	3000 N	1500 mm	104
CDP-TW-K-BSY+ *	230 V AC	3000 N	1500 mm	108

All maximum specifications only refer to the standard article unless otherwise indicated.
The specifications for the sets are per drive.
* Variant article

VCD 203



Performance features

- For façade windows, roof windows and ventilation flaps in conservatories
- With motor electronics controlled via microprocessor
- "TMS+" tandem safety function for operating 2 drives on one sash
- Option of chain stroke programming via magnet
- Reprogrammed opening stroke is transmitted to the tandem drive
- Simple connection via plug connector
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

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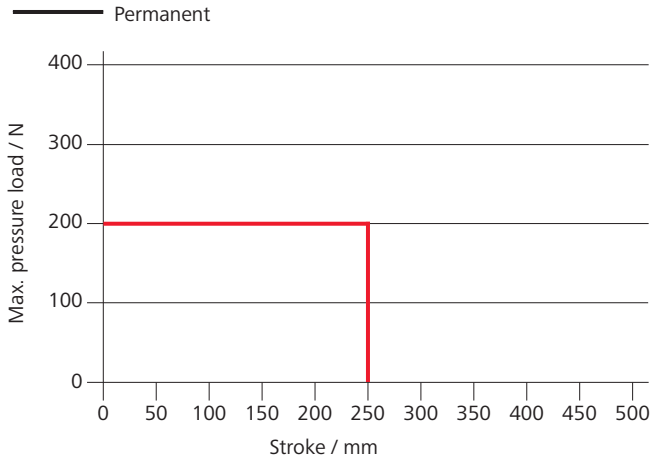
Pressure load diagram



Technical data

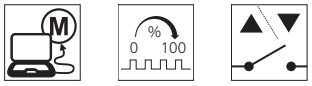
	VCD 203
Supply	24 V DC / ±20 % / 0.35 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)
Force of pressure	200 N
Tensile force	200 N
Nominal locking force	2000 N
Service life	20000 double strokes *
Stroke	250 mm
OPEN running speed	6 mm/s
CLOSED running speed	6 mm/s
Type of protection	IP 30
Emission sound pressure level	LpA ≤ 46 dB(A)
Temperature range	0 °C ... +60 °C
Housing	Die-cast zinc
Surface	Powder-coated
Connection	2.5 m PVC-cable
W x H x D	300 x 30 x 47 mm
Weight	1.40 kg

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

VCD 203

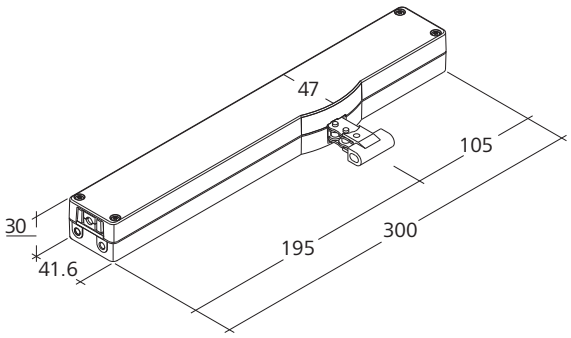
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Colour	Remark
VCD 203/250 (SR)	25.150.05	250 mm	Silver (~ RAL 9006)	
VCD 203/250 (BK)	25.150.07	250 mm	Black (~ RAL 9005)	
VCD 203/250 (WH)	25.150.06	250 mm	White (~ RAL 9016)	
VCD 203-PLP	25.150.00			Variable equipment possible

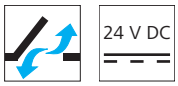
Brackets are not included and have to be ordered separately; suitable brackets starting on page 170

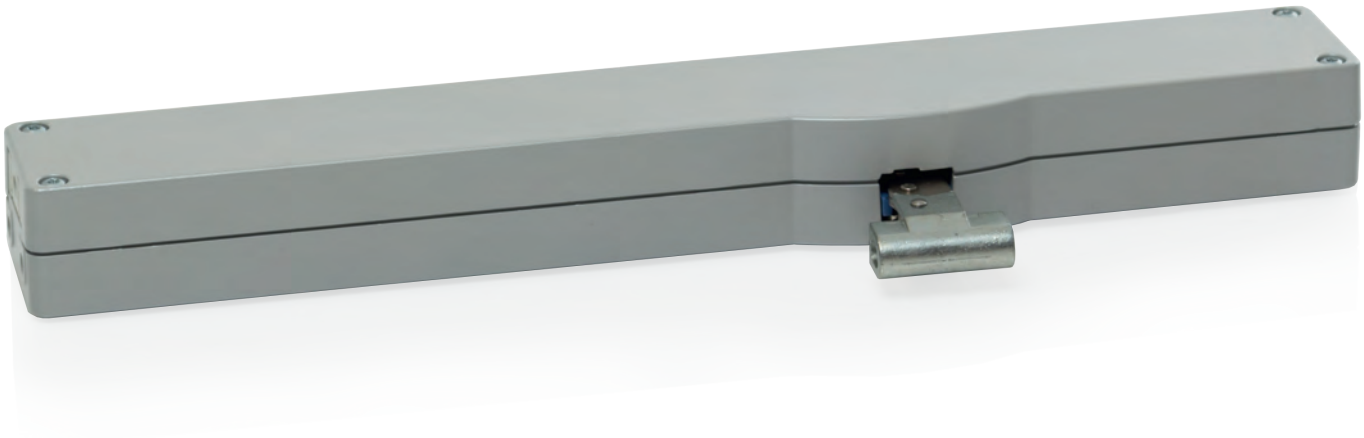
Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension

VCD-0203-1-ACB

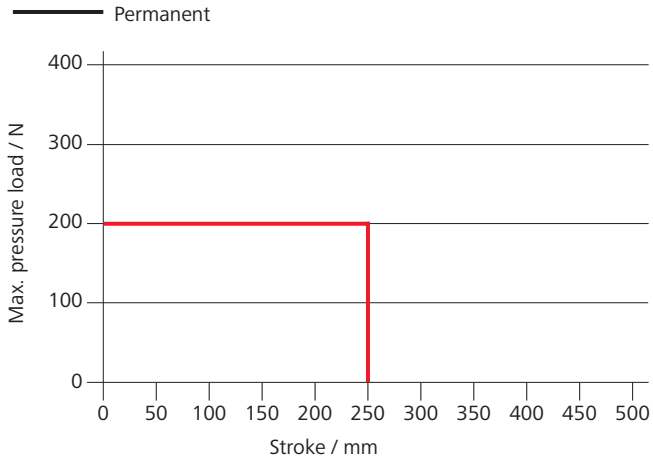




Performance features

- For façade windows, roof windows and ventilation flaps in conservatories
- With BSY+ motor and synchronised electronics controlled via microprocessor
- Option of up to 8 drives in one synchronous group
- Simple connection via plug connector
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)
- Integrated ACB (Advanced Communication Bus) bus interface with Modbus RTU protocol
- The drive is integrated directly via open bus communication through the ACB (Advanced Communication Bus), e.g. in a building management system

Pressure load diagram



Technical data

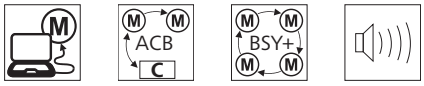
	VCD-0203-1-ACB
Supply	24 V DC / ±20 % / 0.35 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)
Force of pressure	200 N
Tensile force	200 N
Nominal locking force	2000 N
Service life	20000 double strokes *
Stroke	250 mm
OPEN running speed	6 mm/s
CLOSED running speed	6 mm/s
Type of protection	IP 30
Emission sound pressure level	LpA ≤ 46 dB(A)
Temperature range	0 °C ... +60 °C
Housing	Die-cast zinc
Surface	Powder-coated
Colour	Silver (~ RAL 9006)
Connection	2.5 m PVC-cable
W x H x D	300 x 30 x 47 mm
Weight	1.10 kg

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

VCD-0203-1-ACB

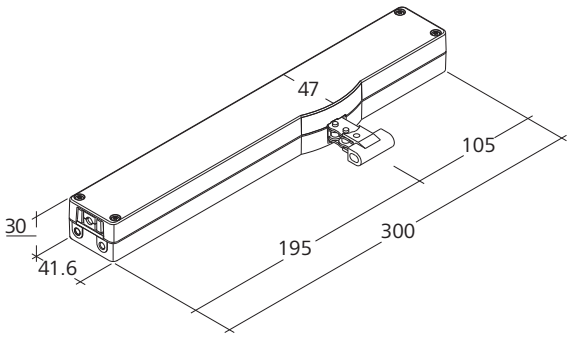
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Remark
VCD-0203-0250-1-ACB M1-R	25.155.05	250 mm	
VCD-0203-1-ACB	25.155.10		Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 170

Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension
- Trapezoidal application

VCD 204 / VCD 204-TMS+ Set

Performance features

- For façade windows, roof windows and ventilation flaps in conservatories
- With motor electronics controlled via microprocessor
- Special chain stabilisation and centred chain outlet
- "TMS+" tandem safety function for operating 2 drives on one sash
- Option of chain stroke programming via magnet
- Reprogrammed opening stroke is transmitted to the tandem drive
- Direct cable guidance between the drives for visually appealing solution (VCD 204-TMS+ Set)
- Simple connection via plug connector
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

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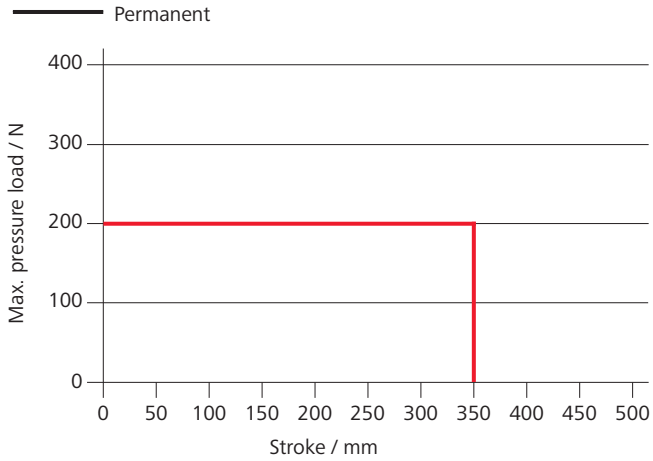
Pressure load diagram

Specification per drive



Technical data

Specification per drive

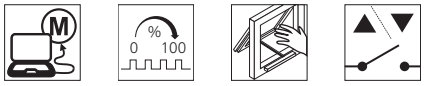
	VCD 204	VCD 204-TMS+ Set
Supply	24 V DC / ±20 % / 0.35 A	
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Force of pressure	200 N	
Tensile force	200 N	
Nominal locking force	2000 N	
Service life	20000 double strokes *	
Stroke	250 - 350 mm	
OPEN running speed	6 mm/s	
CLOSED running speed	6 mm/s	
Type of protection	IP 30	
Emission sound pressure level	LpA ≤ 46 dB(A)	
Temperature range	0 °C ... +60 °C	
Housing	Die-cast zinc	
Surface	Powder-coated	
Connection	2.5 m PVC-cable	
W x H x D	480 x 30 x 47 mm	
Weight	1.50 kg	

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

VCD 204 / VCD 204-TMS+ Set

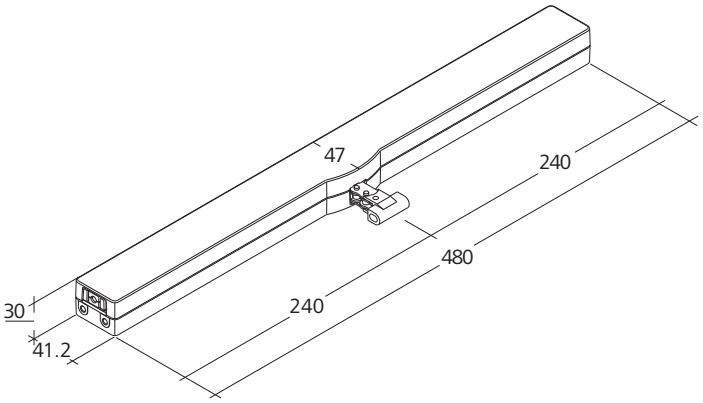
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Colour	Remark
VCD 204/250 (SR)	25.100.05	250 mm	Silver (~ RAL 9006)	
VCD 204/250 (BK)	25.100.07	250 mm	Black (~ RAL 9005)	
VCD 204/250 (WH)	25.100.06	250 mm	White (~ RAL 9016)	
VCD 204/350 (SR)	25.100.10	350 mm	Silver (~ RAL 9006)	
VCD 204/350 (BK)	25.100.12	350 mm	Black (~ RAL 9005)	
VCD 204/350 (WH)	25.100.11	350 mm	White (~ RAL 9016)	
VCD 204/350-TMS+ Set (SR)	25.122.05	350 mm	Silver (~ RAL 9006)	
VCD 204/350-TMS+ Set (BK)	25.122.07	350 mm	Black (~ RAL 9005)	
VCD 204/350-TMS+ Set (WH)	25.122.06	350 mm	White (~ RAL 9016)	
VCD 204-PLP	25.100.00			Variable equipment possible

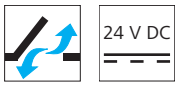
Brackets are not included and have to be ordered separately; suitable brackets starting on page 170

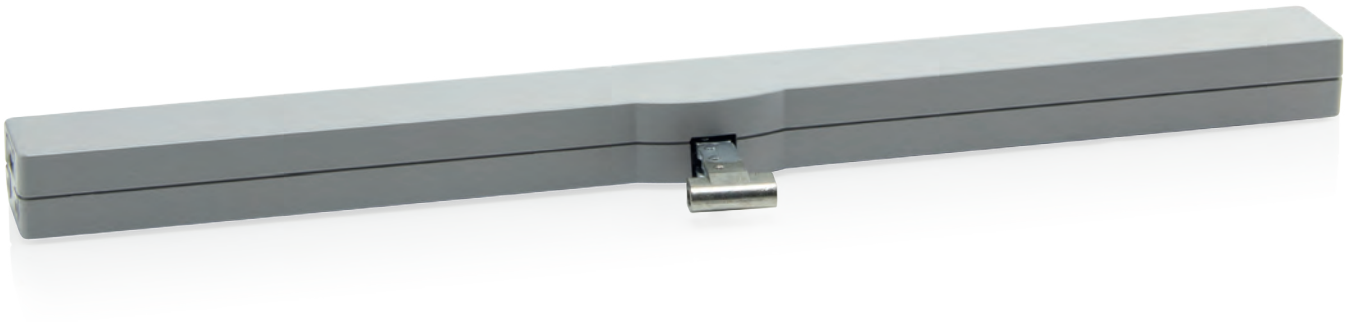
Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension

VCD-0204-1-ACB

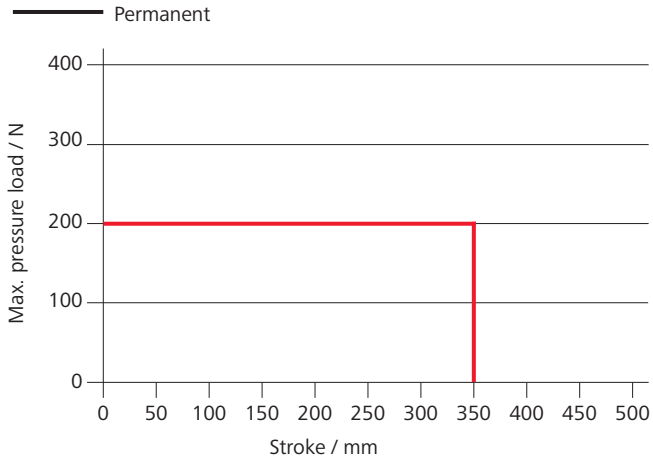




Performance features

- For façade windows, roof windows and ventilation flaps in conservatories
- With BSY+ motor and synchronised electronics controlled via microprocessor
- Special chain stabilisation and centred chain outlet
- Option of up to 8 drives in one synchronous group
- Simple connection via plug connector
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)
- Integrated ACB (Advanced Communication Bus) bus interface with Modbus RTU protocol
- The drive is integrated directly via open bus communication through the ACB (Advanced Communication Bus), e.g. in a building management system

Pressure load diagram



Technical data

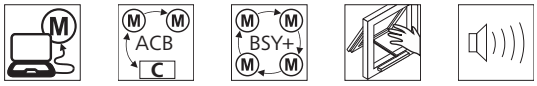
	VCD-0204-1-ACB
Supply	24 V DC / ±20 % / 0.35 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)
Force of pressure	200 N
Tensile force	200 N
Nominal locking force	2000 N
Service life	20000 double strokes *
Stroke	250 - 350 mm
OPEN running speed	6 mm/s
CLOSED running speed	6 mm/s
Type of protection	IP 30
Emission sound pressure level	LpA ≤ 46 dB(A)
Temperature range	0 °C ... +60 °C
Housing	Die-cast zinc
Surface	Powder-coated
Colour	Silver (~ RAL 9006)
Connection	2.5 m PVC-cable
W x H x D	480 x 30 x 47 mm
Weight	1.55 kg

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

VCD-0204-1-ACB

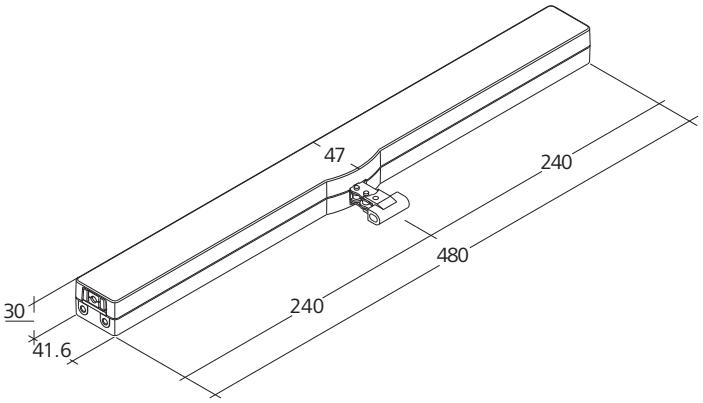
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Remark
VCD-0204-0250-1-ACB M1-M	25.155.15	250 mm	
VCD-0204-0350-1-ACB M1-M	25.155.25	350 mm	
VCD-0204-1-ACB	25.155.35		Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 170

Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension
- Trapezoidal application

VCD 204-K / VCD 204-K-TMS+ Set

Performance features

- For façade windows, roof windows and ventilation flaps in conservatories
- With motor electronics controlled via microprocessor
- Direct control via 230 V AC
- Special chain stabilisation and centred chain outlet
- "TMS+" tandem safety function for operating 2 drives on one sash (VCD 204-K-TMS+ Set)
- Option of chain stroke programming via magnet
- Reprogrammed opening stroke is transmitted to the tandem drive (VCD 204-K-TMS+ Set)
- Simple connection via plug connector
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

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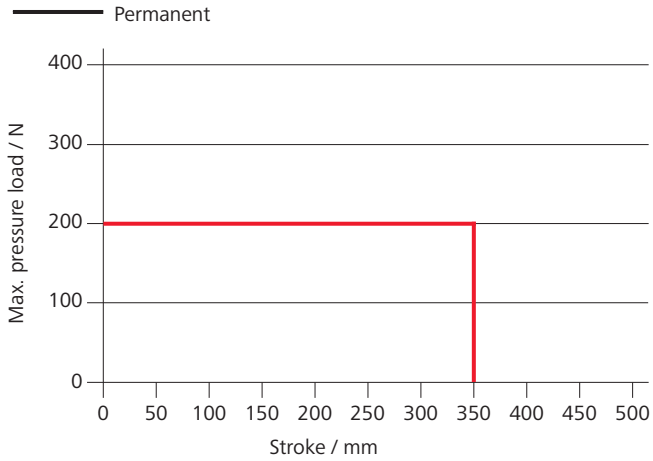
Pressure load diagram

Specification per drive



Technical data

Specification per drive

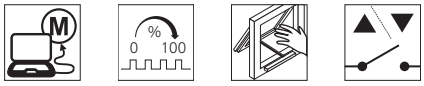
	VCD 204-K	VCD 204-K-TMS+ Set
Supply	230 V AC / +10 % ... -15 %	
Input frequency	50 ... 60 Hz	
Performance	10 W / 15 VA	
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Force of pressure	200 N	
Tensile force	200 N	
Nominal locking force	2000 N	
Service life	20000 double strokes *	
Stroke	250 - 350 mm	
OPEN running speed	6 mm/s	
CLOSED running speed	6 mm/s	
Type of protection	IP 30	
Emission sound pressure level	LpA ≤ 46 dB(A)	
Temperature range	0 °C ... +60 °C	
Housing	Die-cast zinc	
Surface	Powder-coated	
Connection	2.5 m PVC-cable	
W x H x D	480 x 30 x 47 mm	
Weight	1.60 kg	

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

VCD 204-K / VCD 204-K-TMS+ Set

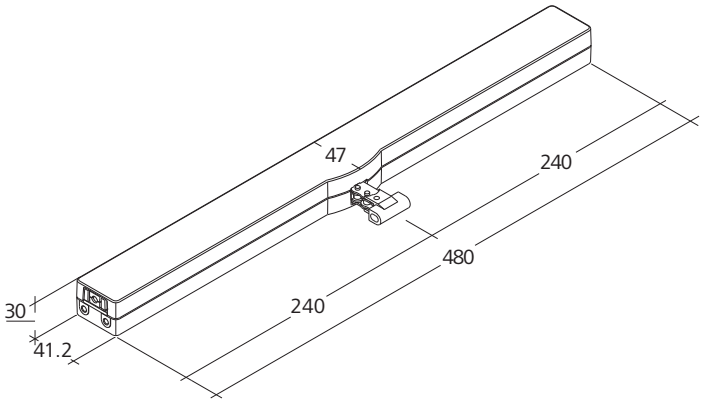
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Colour	Remark
VCD 204/250-K (SR)	25.120.05	250 mm	Silver (~ RAL 9006)	
VCD 204/250-K (BK)	25.120.07	250 mm	Black (~ RAL 9005)	
VCD 204/250-K (WH)	25.120.06	250 mm	White (~ RAL 9016)	
VCD 204/350-K (SR)	25.120.10	350 mm	Silver (~ RAL 9006)	
VCD 204/350-K (BK)	25.120.12	350 mm	Black (~ RAL 9005)	
VCD 204/350-K (WH)	25.120.11	350 mm	White (~ RAL 9016)	
VCD 204-K	25.120.00			Variable equipment possible
VCD 204/350-K-TMS+ Set (SR)	25.121.10	350 mm	Silver (~ RAL 9006)	
VCD 204-K-/Z-TMS+	25.121.00			Variable equipment possible

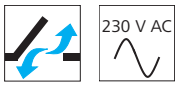
Brackets are not included and have to be ordered separately; suitable brackets starting on page 170

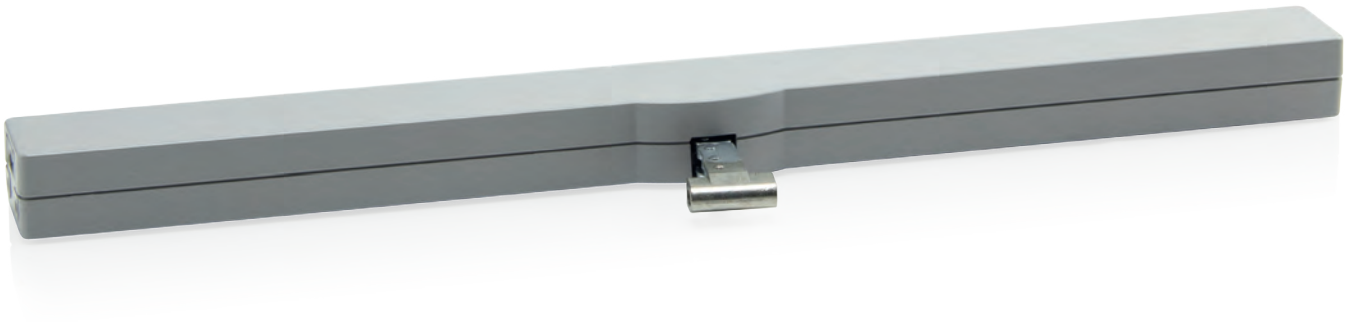
Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension

VCD-0204-5-ACB

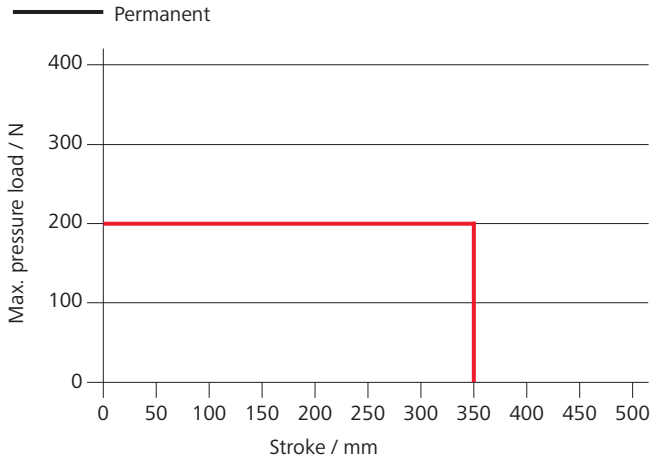




Performance features

- For façade windows, roof windows and ventilation flaps in conservatories
- With BSY+ motor and synchronised electronics controlled via microprocessor
- Direct control via 230 V AC
- Special chain stabilisation and centred chain outlet
- 2 drives in one synchronous group possible
- Simple connection via plug connector
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)
- Integrated ACB (Advanced Communication Bus) bus interface with Modbus RTU protocol
- The drive is integrated directly via open bus communication through the ACB (Advanced Communication Bus), e.g. in a building management system

Pressure load diagram



Technical data

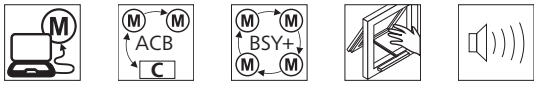
	VCD-0204-5-ACB
Supply	230 V AC / +10 % ... -15 %
Input frequency	50 ... 60 Hz
Performance	22 W / 30 VA
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)
Force of pressure	200 N
Tensile force	200 N
Nominal locking force	2000 N
Service life	20000 double strokes *
Stroke	250 - 350 mm
OPEN running speed	6 mm/s
CLOSED running speed	6 mm/s
Type of protection	IP 30
Emission sound pressure level	LpA ≤ 46 dB(A)
Temperature range	0 °C ... +60 °C
Housing	Die-cast zinc
Surface	Powder-coated
Colour	Silver (~ RAL 9006)
Connection	2.5 m PVC-cable
W x H x D	480 x 30 x 47 mm
Weight	1.60 kg

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

VCD-0204-5-ACB

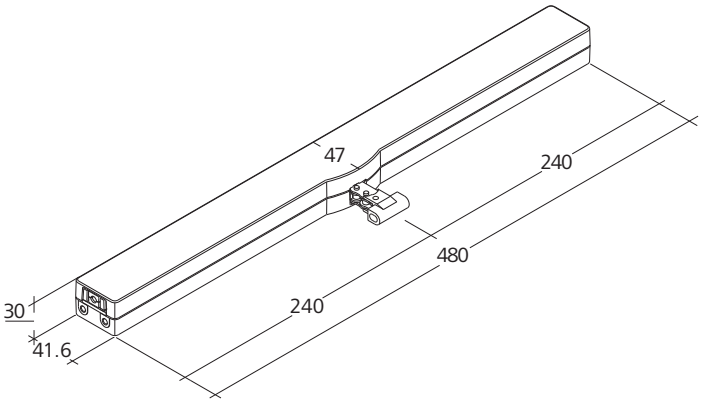
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Remark
VCD-0204-0250-5-ACB M1-M	25.155.20	250 mm	
VCD-0204-0350-5-ACB M1-M	25.155.30	350 mm	
VCD-0204-5-ACB	25.155.40		Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 170

Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension
- Trapezoidal application

CDC-0252-1-TMS+

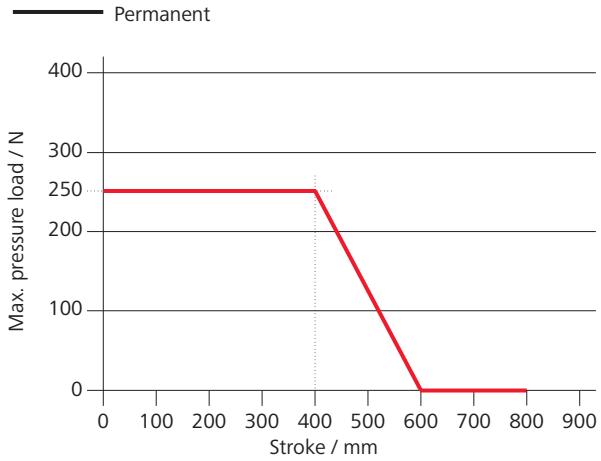
Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- Perfectly suited for profile integrated and surface mounted installation
- Low running noises thanks to the innovative acoustic decoupling of the drive components
- Universal bracket sets for installation of all commonly available profile systems
- With motor electronics controlled via microprocessor
- "TMS+" tandem safety function for operating 2 drives on one sash
- Option of chain stroke programming via magnet
- Reprogrammed opening stroke is transmitted to the tandem drive
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

Pressure load diagram



Technical data

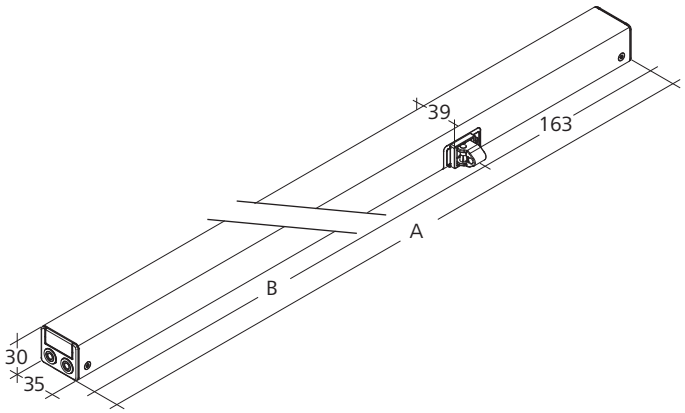
	CDC-0252-0350-1-TMS+	CDC-0252-0600-1-TMS+	CDC-0252-0800-1-TMS+
Supply	24 V DC / ±15 % / 0.6 A	24 V DC / ±15 % / 0.8 A	24 V DC / ±15 % / 1 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)		
Force of pressure	250 N		
Tensile force	250 N		
Nominal locking force	1500 N		
Service life	20000 double strokes *		
Stroke	350 - 800 mm		
OPEN running speed	6.7 mm/s		
OPEN running speed - SHEV	9.4 mm/s	13.6 mm/s	15 mm/s
CLOSED running speed	5 mm/s	6.7 mm/s	6.7 mm/s
Type of protection	IP 32		
Emission sound pressure level	LpA ≤ 35 dB(A)		
Temperature range	-5 °C ... +75 °C		
Fire resistance	B300 (30 min / 300 °C)		
Housing	Aluminium		
Surface	Powder-coated		
Colour	White aluminium (~ RAL 9006)		
Connection	2.5 m silicone cable		
W x H x D	405 x 30 x 39 mm	530 x 30 x 39 mm	635 x 30 x 39 mm
Weight	1.10 kg	1.31 kg	1.42 kg

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

CDC-0252-1-TMS+

Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Dimension A	Dimension B	Remark
CDC-0252-0350-1-TMS+ -R	26.109.10	350 mm	405 mm	242 mm	Right type
CDC-0252-0600-1-TMS+ -R	26.109.20	600 mm	530 mm	367 mm	Right type
CDC-0252-0800-1-TMS+ -R	26.109.30	800 mm	635 mm	472 mm	Right type

Brackets are not included and have to be ordered separately; suitable brackets starting on page 176

Possible applications

Illustration provided as an example

- Mounted installation
- Integrated installation
- Sash mounting
- Frame mounting
- Application force
- Application tension

CDC-0252-1-ACB

Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- Perfectly suited for profile integrated and surface mounted installation
- Low running noises thanks to the innovative acoustic decoupling of the drive components
- Universal bracket sets for installation of all commonly available profile systems
- Flexible overall lengths for customised strokes
- Available in all RAL colours
- Can be used for virtually all window opening types thanks to the left and right drive
- Integrated ACB (Advanced Communication Bus) bus interface with Modbus RTU protocol
- The drive is integrated directly via open bus communication through the ACB (Advanced Communication Bus), e.g. in a building management system

Approvals / Certificates

Find out about permission details from your D+H Partner.

DEKRA certified

5014068.16004

ZERTIFIZIERT EN 12101-2 CERTIFIED D+H EURO RWA D+H EURO SHEV

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CNBOP-PIB

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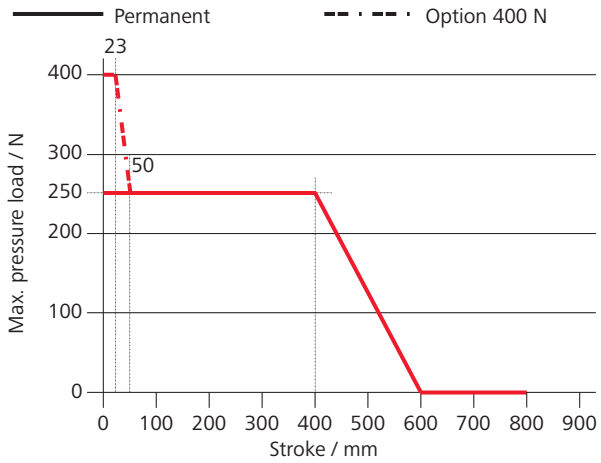
Pressure load diagram



Technical data

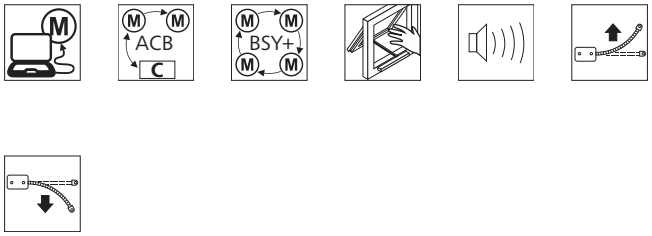
	CDC-0252-0350-1-ACB	CDC-0252-0500-1-ACB	CDC-0252-0600-1-ACB	CDC-0252-0800-1-ACB
Supply	24 V DC / ±15 % / 0.6 A	24 V DC / ±15 % / 0.8 A	24 V DC / ±15 % / 0.8 A	24 V DC / ±15 % / 1 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)			
Force of pressure	250 N			
Tensile force	250 N			
Nominal locking force	1500 N			
Service life	20000 double strokes *			
Stroke	350 - 1300 mm			
OPEN running speed	6.7 mm/s			
OPEN running speed - SHEV	9.4 mm/s	13.6 mm/s	13.6 mm/s	15 mm/s
CLOSED running speed	5 mm/s	6.7 mm/s	6.7 mm/s	6.7 mm/s
Type of protection	IP 32			
Emission sound pressure level	LpA ≤ 35 dB(A)			
Temperature range	-5 °C ... +75 °C			
Fire resistance	B300 (30 min / 300 °C)			
Housing	Aluminium			
Surface	Powder-coated			
Colour	White aluminium (~ RAL 9006)			
Connection	2.5 m silicone cable			
W x H x D	405 x 30 x 39 mm	485 x 30 x 39 mm	530 x 30 x 39 mm	635 x 30 x 39 mm
Weight	1.10 kg	1.20 kg	1.40 kg	1.60 kg

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

CDC-0252-1-ACB

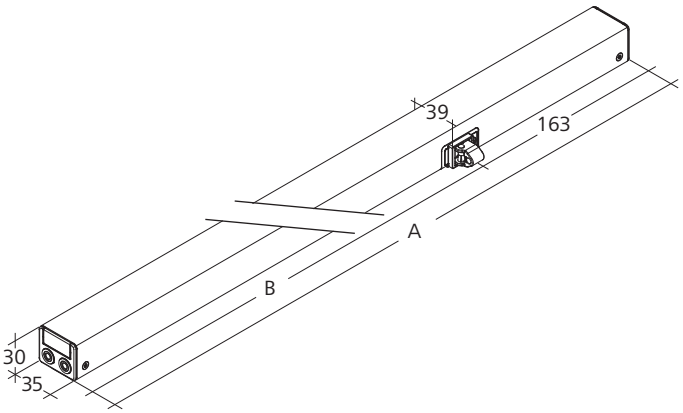
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Dimension A	Dimension B	Remark
CDC-0252-0350-1-ACB M1-R	26.100.05	350 mm	405 mm	242 mm	Right type
CDC-0252-0350-1-ACB M1-L	26.100.10	350 mm	405 mm	242 mm	Left type
CDC-0252-0350-1-ACB M2-R	26.100.06	350 mm	405 mm	242 mm	Right type
CDC-0252-0350-1-ACB S1-L	26.100.11	350 mm	405 mm	242 mm	Left type
CDC-0252-0500-1-ACB M1-R	26.100.55	500 mm	485 mm	322 mm	Right type
CDC-0252-0500-1-ACB M1-L	26.100.60	500 mm	485 mm	322 mm	Left type
CDC-0252-0500-1-ACB M2-R	26.100.56	500 mm	485 mm	322 mm	Right type
CDC-0252-0500-1-ACB S1-L	26.100.61	500 mm	485 mm	322 mm	Left type
CDC-0252-0600-1-ACB M1-R	26.101.05	600 mm	530 mm	367 mm	Right type
CDC-0252-0600-1-ACB M1-L	26.101.10	600 mm	530 mm	367 mm	Left type
CDC-0252-0600-1-ACB M2-R	26.101.06	600 mm	530 mm	367 mm	Right type
CDC-0252-0600-1-ACB S1-L	26.101.11	600 mm	530 mm	367 mm	Left type
CDC-0252-0800-1-ACB M1-R	26.102.05	800 mm	635 mm	472 mm	Right type
CDC-0252-0800-1-ACB M1-L	26.102.10	800 mm	635 mm	472 mm	Left type
CDC-0252-0800-1-ACB M2-R	26.102.06	800 mm	635 mm	472 mm	Right type
CDC-0252-0800-1-ACB S1-L	26.102.11	800 mm	635 mm	472 mm	Left type
CDC-1-ACB	26.100.00				Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 176

More information about special applications starting on page 182

Possible applications

Illustration provided as an example

- Mounted installation
- Integrated installation
- Sash mounting
- Frame mounting
- Application force
- Application tension
- Trapezoidal application
- Drawbridge application

CDC-0252-5-ACB

Performance features

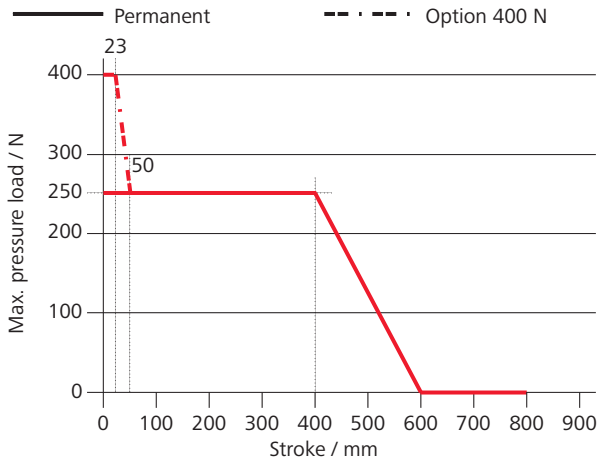
- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- Perfectly suited for profile integrated and surface mounted installation
- Low running noises thanks to the innovative acoustic decoupling of the drive components
- Direct control via 230 V AC
- Universal bracket sets for installation of all commonly available profile systems
- Flexible overall lengths for customised strokes
- Available in all RAL colours
- Integrated ACB (Advanced Communication Bus) bus interface with Modbus RTU protocol
- The drive is integrated directly via open bus communication through the ACB (Advanced Communication Bus), e.g. in a building management system

Approvals / Certificates

Find out about permission details from your D+H Partner.

5014068.17002-1

Pressure load diagram



Technical data

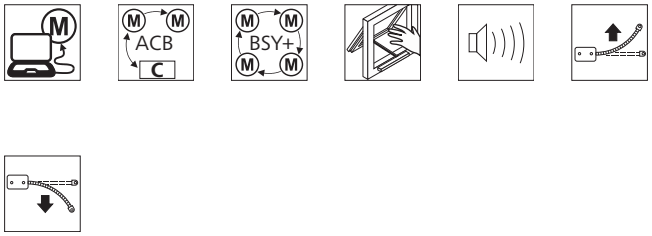
	CDC-0252-0350-5-ACB	CDC-0252-0500-5-ACB	CDC-0252-0600-5-ACB	CDC-0252-0800-5-ACB
Supply	230 V AC / +10 % ... -15 %			
Input frequency	50 Hz			
Performance	33 W / 45 VA			
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)			
Force of pressure	250 N			
Tensile force	250 N			
Nominal locking force	1500 N			
Service life	20000 double strokes *			
Stroke	350 - 1200 mm			
OPEN running speed	6.7 mm/s			
OPEN running speed - SHEV	9.4 mm/s	13.6 mm/s	13.6 mm/s	15 mm/s
CLOSED running speed	5 mm/s	6.7 mm/s	6.7 mm/s	6.7 mm/s
Type of protection	IP 32			
Emission sound pressure level	LpA ≤ 35 dB(A)			
Temperature range	-5 °C ... +75 °C			
Fire resistance	B300 (30 min / 300 °C)			
Housing	Aluminium			
Surface	Powder-coated			
Colour	White aluminium (~ RAL 9006)			
Connection	2.5 m silicone cable			
W x H x D	545 x 30 x 39 mm	625 x 30 x 39 mm	670 x 30 x 39 mm	775 x 30 x 39 mm
Weight	1.30 kg	1.40 kg	1.50 kg	1.80 kg

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

CDC-0252-5-ACB

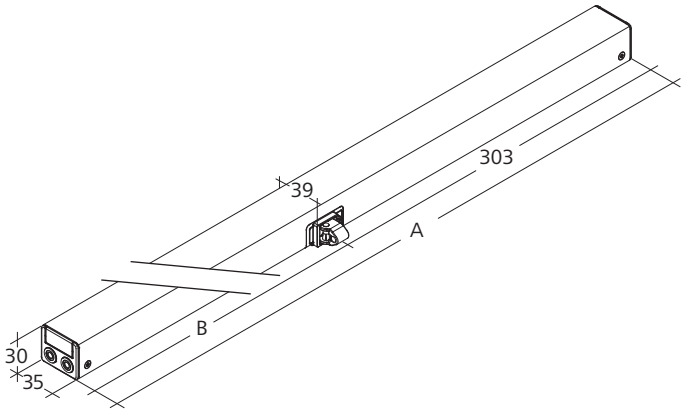
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Supply	Stroke	Dimension A	Dimension B	Remark
CDC-0252-0350-5-ACB M1-R	26.105.05		350 mm	545 mm	242 mm	Right type
CDC-0252-0350-5-ACB M2-R	26.105.06		350 mm	545 mm	242 mm	Right type
CDC-0252-0350-1-ACB S1-L ON	26.105.11	24 V DC / ±15 % / 0.6 A	350 mm	545 mm	242 mm	Left type, without power supply unit
CDC-0252-0500-5-ACB M1-R	26.105.55		500 mm	625 mm	322 mm	Right type
CDC-0252-0500-5-ACB M2-R	26.105.56		500 mm	625 mm	322 mm	Right type
CDC-0252-0500-1-ACB S1-L ON	26.105.61	24 V DC / ±15 % / 0.8 A	500 mm	625 mm	322 mm	Left type, without power supply unit
CDC-0252-0600-5-ACB M1-R	26.106.05		600 mm	670 mm	367 mm	Right type
CDC-0252-0600-5-ACB M2-R	26.106.06		600 mm	670 mm	367 mm	Right type
CDC-0252-0600-1-ACB S1-L ON	26.106.11	24 V DC / ±15 % / 0.8 A	600 mm	670 mm	367 mm	Left type, without power supply unit
CDC-0252-0800-5-ACB M1-R	26.107.05		800 mm	775 mm	472 mm	Right type
CDC-0252-0800-5-ACB M2-R	26.107.06		800 mm	775 mm	472 mm	Right type
CDC-0252-0800-1-ACB S1-L ON	26.107.11	24 V DC / ±15 % / 1 A	800 mm	775 mm	472 mm	Left type, without power supply unit
CDC-5-ACB	26.105.00					Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 176

More information about special applications starting on page 182

Possible applications

Illustration provided as an example






- Mounted installation
- Integrated installation
- Sash mounting
- Frame mounting
- Application force
- Application tension
- Trapezoidal application
- Drawbridge application

CDC-TW-0502-1-ACB

Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- Low running noises thanks to the innovative acoustic decoupling of the drive components
- 2 drive chains for optimal power application to the sash
- Connection from either the left or the right side is possible (supply includes BUS signals)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)
- Available in all RAL colours
- Integrated ACB (Advanced Communication Bus) bus interface with Modbus RTU protocol
- The drive is integrated directly via open bus communication through the ACB (Advanced Communication Bus), e.g. in a building management system

Approvals / Certificates

Find out about permission details from your D+H Partner.

5014068.16004

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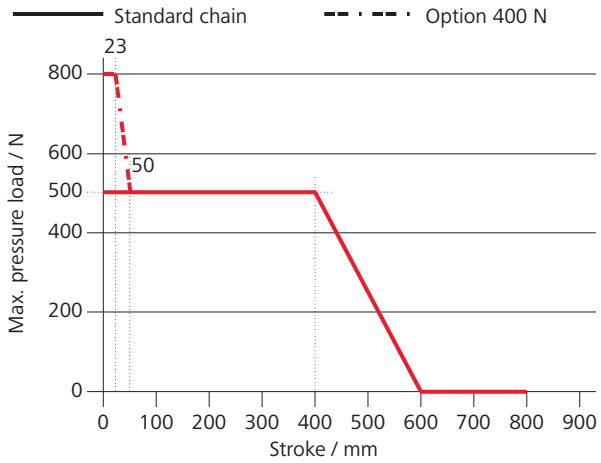
Pressure load diagram



Technical data

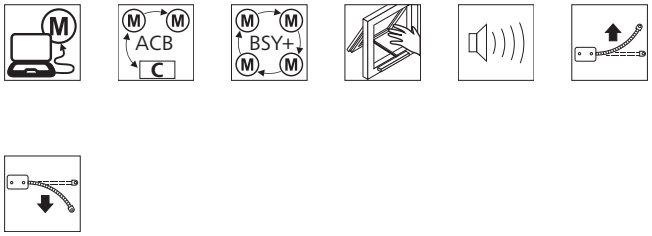
	CDC-TW-0502-0500-1-ACB	CDC-TW-0502-0800-1-ACB
Supply	24 V DC / ±15 % / 1.6 A	24 V DC / ±15 % / 2 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Force of pressure	500 N	
Tensile force	500 N	
Nominal locking force	3000 N	
Service life	20000 double strokes *	
Stroke	350 - 800 mm	
OPEN running speed	6.7 mm/s	
OPEN running speed - SHEV	13.6 mm/s	15 mm/s
CLOSED running speed	6.7 mm/s	
Type of protection	IP 32	
Emission sound pressure level	LpA ≤ 35 dB(A)	
Temperature range	-5 °C ... +75 °C	
Fire resistance	B300 (30 min / 300 °C)	
Housing	Aluminium	
Surface	Powder-coated	
Colour	White aluminium (~ RAL 9006)	
Connection	2.5 m silicone cable	
W x H x D	1265 x 30 x 39 mm	
Weight	3.00 kg	

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

CDC-TW-0502-1-ACB

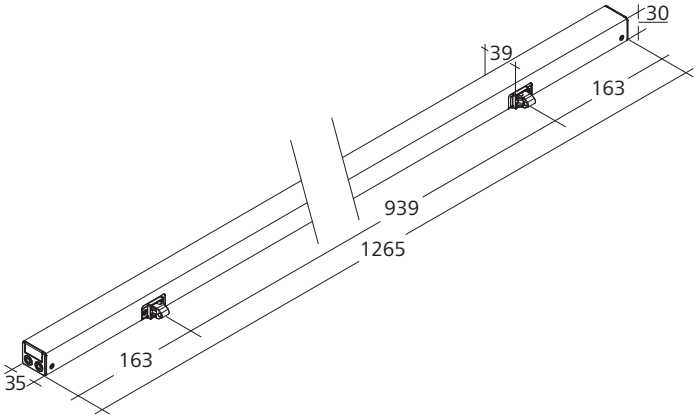
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Remark
CDC-TW-0502-0500-1-ACB	26.103.20	500 mm	
CDC-TW-0502-0800-1-ACB	26.103.15	800 mm	
CDC-TW-1-ACB	26.103.00		Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 176

More information about special applications starting on page 182

Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension

KA-PLP

Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With motor electronics controlled via microprocessor
- High-speed function (HS) for especially fast opening windows in case of fire (SHEV)
- Special chain stabilisation
- Pressure applications up to 700 mm (KA 34) / 600 mm (KA 54), application tension stroke lengths >1000 mm possible
- Relief of pressure on window gasket after closing process
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

VdS G 503007

DEKRA 5014068.18005-1

ZERTIFIZIERT EN 12101-2 CE CERTIFIED D+H EURO RWA D+H EURO SHEV

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CNBOP-PIB

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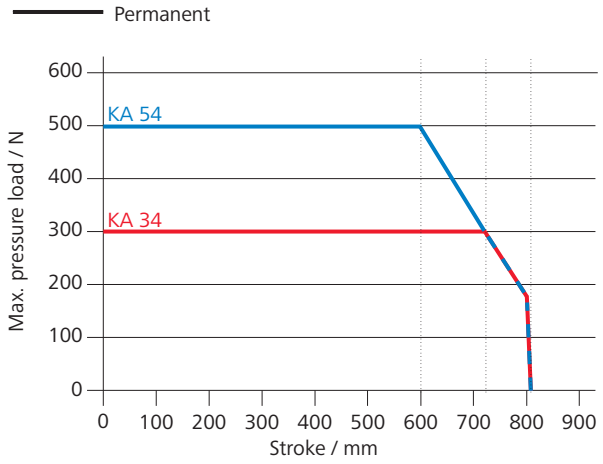
Pressure load diagram



Technical data

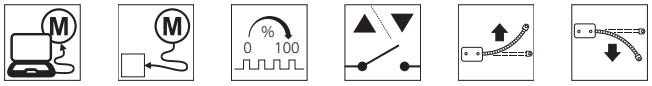
	KA 34	KA 54
Supply	24 V DC / ±15 % / 1 A	24 V DC / ±15 % / 1.4 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Force of pressure	300 N	500 N
Tensile force	300 N	500 N
Nominal locking force	2000 N	
Service life	20000 double strokes *	
Stroke	350 - 1300 mm	
OPEN running speed	11.8 mm/s	
OPEN running speed - SHEV	12.2 mm/s	13.3 mm/s
CLOSED running speed	11.8 mm/s	
Type of protection	IP 32	
Emission sound pressure level	LpA ≤ 70 dB(A)	
Temperature range	-5 °C ... +75 °C	
Fire resistance	B300 (30 min / 300 °C)	
Housing	Aluminium	
Surface	Powder-coated	
Colour	White aluminium (~ RAL 9006)	
Connection	2.5 m silicone cable	
Dimension A	421 - 902 mm	

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

KA-PLP

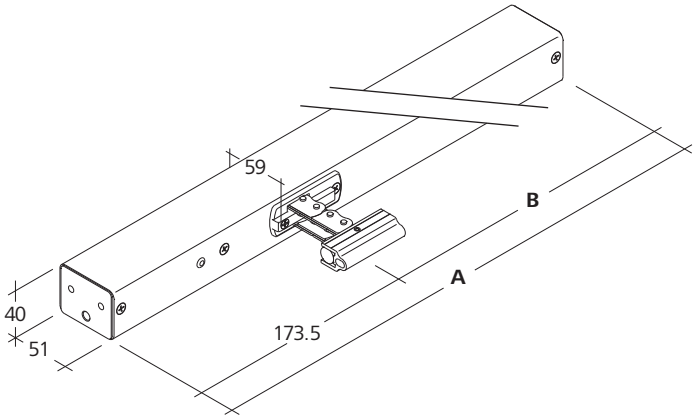
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Dimension A	Dimension B	Weight	Remark
KA 34/350	26.000.10	350 mm	421 mm	247.5 mm	1.60 kg	
KA 34/500	26.000.15	500 mm	496 mm	322.5 mm	1.90 kg	
KA 34/600	26.000.20	600 mm	546 mm	372.5 mm	2.20 kg	
KA 34/700	26.000.25	700 mm	596 mm	422.5 mm	2.40 kg	
KA 34/800	26.000.30	800 mm	646 mm	472.5 mm	2.60 kg	Observe pressure load diagram!
KA 34/1000	26.000.35	1000 mm	750 mm	576.5 mm	3.00 kg	Observe pressure load diagram!
KA 54/350	26.001.10	350 mm	421 mm	247.5 mm	1.60 kg	
KA 54/500	26.001.15	500 mm	496 mm	322.5 mm	1.90 kg	
KA 54/600	26.001.20	600 mm	546 mm	372.5 mm	2.20 kg	
KA 54/800	26.001.30	800 mm	646 mm	472.5 mm	2.60 kg	Observe pressure load diagram!
KA-PLP	26.000.00					Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 184

Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension

KA-BSY+

BSY+ set consisting of: Standard + left-hand “L” drive

Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- High-speed function (HS) for especially fast opening windows in case of fire (SHEV)
- Option of up to 8 drives in one synchronous group
- Supply and signals at KA 34-BSY+ for up to 3 drives (KA 54-BSY+ up to 2 drives) can be looped in series
- Special chain stabilisation
- Relief of pressure on window gasket after closing process
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

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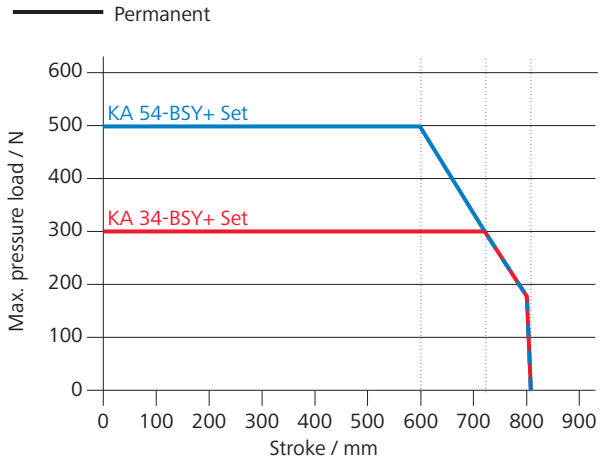
Pressure load diagram

Specification per drive



Technical data

Specification per drive

	KA 34-BSY+ Set	KA 54-BSY+ Set
Supply	24 V DC / ±15 % / 1 A	24 V DC / ±15 % / 1.4 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Force of pressure	300 N	500 N
Tensile force	300 N	500 N
Nominal locking force	2000 N	
Service life	20000 double strokes *	
Stroke	350 - 1300 mm	
OPEN running speed	11.8 mm/s	
OPEN running speed - SHEV	12.2 mm/s	13.3 mm/s
CLOSED running speed	11.8 mm/s	
Type of protection	IP 32	
Emission sound pressure level	LpA ≤ 70 dB(A)	
Temperature range	-5 °C ... +75 °C	
Fire resistance	B300 (30 min / 300 °C)	
Housing	Aluminium	
Surface	Powder-coated	
Colour	White aluminium (~ RAL 9006)	
Connection	2.5 m silicone cable	
Dimension A	421 - 902 mm	

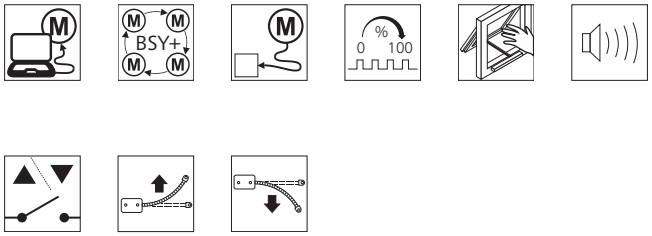
For an illustration of the dimensions, see the next page.

* For vertical use, please consult with D+H Sales!

KA-BSY+

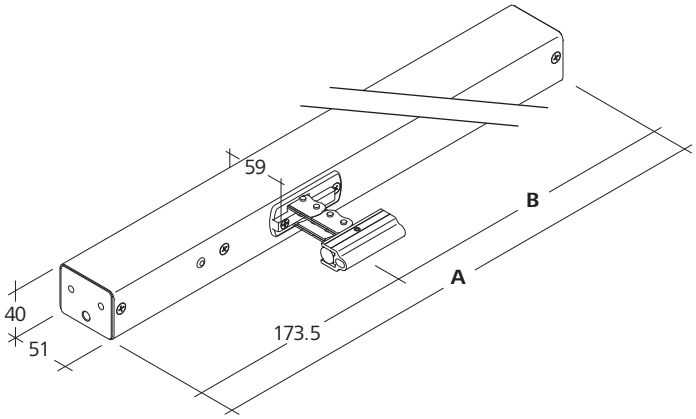
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Weight per drive

Type	Art. No.	Stroke	Dimension A	Dimension B	Weight	Remark
KA 34/600-BSY+ Set	26.010.20	600 mm	546 mm	372.5 mm	2.20 kg	
KA 34/700-BSY+ Set	26.010.25	700 mm	596 mm	422.5 mm	2.40 kg	
KA 34/800-BSY+ Set	26.010.30	800 mm	646 mm	472.5 mm	2.60 kg	Observe pressure load diagram!
KA 34/1000-BSY+ Set	26.010.35	1000 mm	750 mm	576.5 mm	3.00 kg	Observe pressure load diagram!
KA-BSY+	26.010.00					Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 184

Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension
- Drawbridge application

KA-K

Performance features

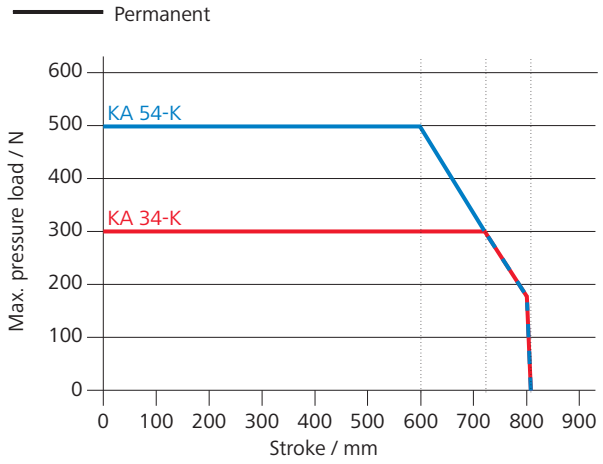
- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With motor electronics controlled via microprocessor
- Direct control via 230 V AC
- Special chain stabilisation
- Relief of pressure on window gasket after closing process
- Pressure applications up to 700 mm (KA 34) / 600 mm (KA 54), application tension stroke lengths >1000 mm possible
- Easy window control via 230 V AC ventilation button
- Adjustable electronic closing force optimisation
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

ZERTIFIZIERT EN 12101-2 CERTIFIED D+H EURO RWA D+H EURO SHEV

Pressure load diagram



Technical data

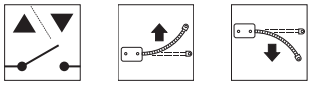
	KA 34-K	KA 54-K
Supply	230 V AC / +10 % ... -15 %	
Input frequency	50 Hz	
Performance	24 W / 40 VA	32 W / 52 VA
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Force of pressure	300 N	500 N
Tensile force	300 N	500 N
Nominal locking force	2000 N	
Service life	20000 double strokes *	
Stroke	350 - 1300 mm	
OPEN running speed	12.1 mm/s	13.3 mm/s
CLOSED running speed	11.8 mm/s	
Type of protection	IP 32	
Emission sound pressure level	LpA ≤ 70 dB(A)	
Temperature range	-5 °C ... +75 °C	
Housing	Aluminium	
Surface	Powder-coated	
Colour	White aluminium (~ RAL 9006)	
Connection	2.5 m silicone cable	
Dimension A	560 - 1041 mm	

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

KA-K

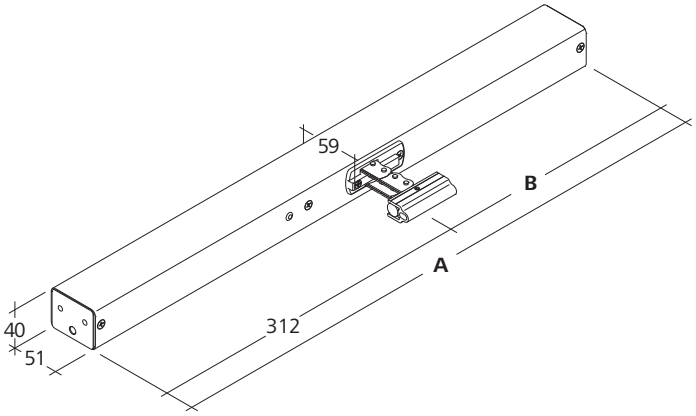
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Dimension A	Dimension B	Weight	Remark
KA 34/350-K	26.005.10	350 mm	560 mm	248 mm	1.80 kg	
KA 34/500-K	26.005.15	500 mm	635 mm	323 mm	2.10 kg	
KA 34/600-K	26.005.20	600 mm	685 mm	373 mm	2.40 kg	
KA 34/800-K	26.005.30	800 mm	785 mm	473 mm	2.80 kg	Observe pressure load diagram!
KA 34/1000-K	26.005.35	1000 mm	889 mm	577 mm	3.20 kg	Observe pressure load diagram!
KA 54/350-K	26.002.05	350 mm	560 mm	248 mm	1.80 kg	
KA 54/500-K	26.002.10	500 mm	635 mm	323 mm	2.10 kg	
KA 54/600-K	26.002.15	600 mm	685 mm	373 mm	2.40 kg	
KA-K	26.005.00					Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 184

Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension

KA-K-BSY+ Set

BSY+ set consisting of: Standard + left-hand “L” drive

Performance features

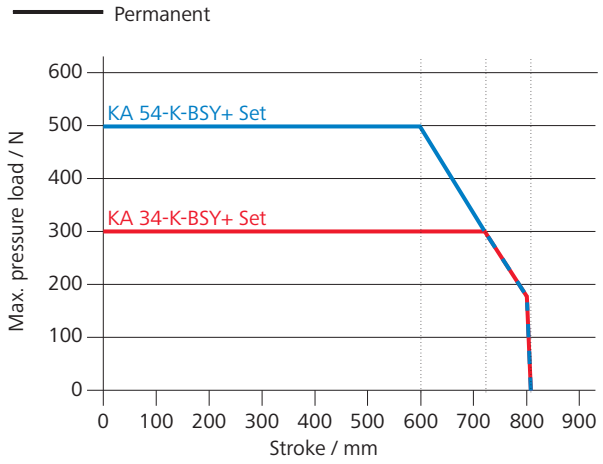
- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- Direct control via 230 V AC
- 2 drives in one synchronous group possible
- Special chain stabilisation
- Relief of pressure on window gasket after closing process
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

Pressure load diagram

Specification per drive



Technical data

Specification per set

	KA 34-K-BSY+ Set	KA 54-K-BSY+ Set
Supply	230 V AC / +10 % ... -15 % / 50 Hz	
Input frequency	50 Hz	
Performance	45 W / 75 VA	75 W / 115 VA
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Force of pressure	300 N	500 N
Tensile force	300 N	500 N
Nominal locking force	2000 N	
Service life	20000 double strokes *	
Stroke	350 - 1300 mm	
OPEN running speed	11.8 mm/s	
OPEN running speed - SHEV	12.2 mm/s	13.3 mm/s
CLOSED running speed	11.8 mm/s	
Type of protection	IP 32	
Emission sound pressure level	LpA ≤ 70 dB(A)	
Temperature range	-5 °C ... +75 °C	
Fire resistance	B300 (30 min / 300 °C)	
Housing	Aluminium	
Surface	Powder-coated	
Connection	Silicone cable	
Dimension A	560 - 1041 mm	

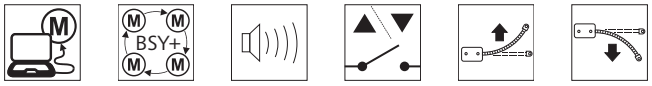
For an illustration of the dimensions, see the next page.

* For vertical use, please consult with D+H Sales!

KA-K-BSY+ Set

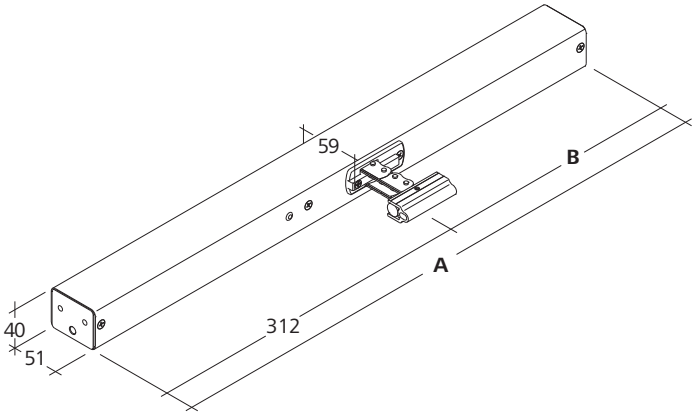
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Dimension A	Remark
KA-K-BSY+ Set	26.007.00	560 - 1041 mm	Variable equipment possible

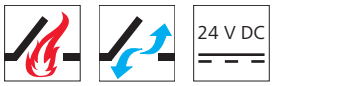
Brackets are not included and have to be ordered separately; suitable brackets starting on page 184

Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension
- Drawbridge application

KA-TW-BSY+



Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- High-speed function (HS) for especially fast opening windows in case of fire (SHEV)
- 2 drive chains for optimal power application to the sash
- Special chain stabilisation
- Relief of pressure on window gasket after closing process
- Electronic force and position control
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

VdS
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CNBOP-PIB

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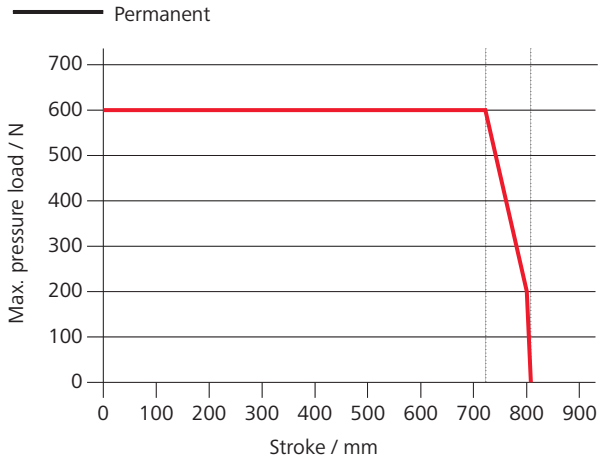
Pressure load diagram



Technical data

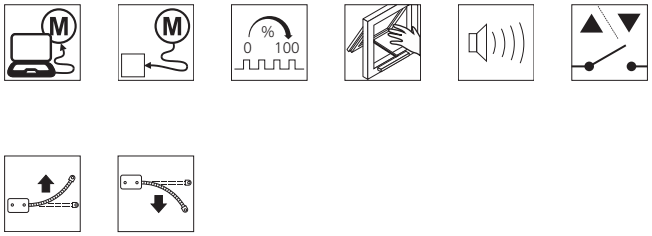
	KA 66-TW
Supply	24 V DC / ±15 % / 2 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)
Force of pressure	600 N
Tensile force	600 N
Nominal locking force	3000 N
Service life	20000 double strokes *
Stroke	350 - 800 mm
OPEN running speed	11.8 mm/s
OPEN running speed - SHEV	12.2 mm/s
CLOSED running speed	11.8 mm/s
Type of protection	IP 32
Emission sound pressure level	LpA ≤ 70 dB(A)
Temperature range	-5 °C ... +75 °C
Fire resistance	B300 (30 min / 300 °C)
Housing	Aluminium
Surface	Powder-coated
Colour	White aluminium (~ RAL 9006)
Connection	2.5 m silicone cable
Dimension A	997 / 1347 mm

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

KA-TW-BSY+

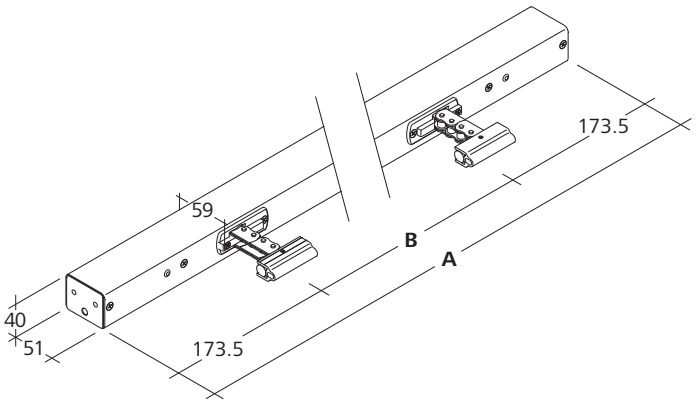
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Design

Type	Art. No.	Stroke	Dimension A	Dimension B	Weight	Remark
KA 66/500-TW1	26.013.40	500 mm	1347 mm	1000 mm	4.40 kg	
KA 66/600-TW1	26.013.50	600 mm	1347 mm	1000 mm	5.00 kg	
KA 66/800-TW1	26.013.60	800 mm	1347 mm	1000 mm	5.60 kg	Observe pressure load diagram!
KA-TW-BSY+	26.013.00					Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 190

Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension

KA-TW-K-BSY+

Performance features

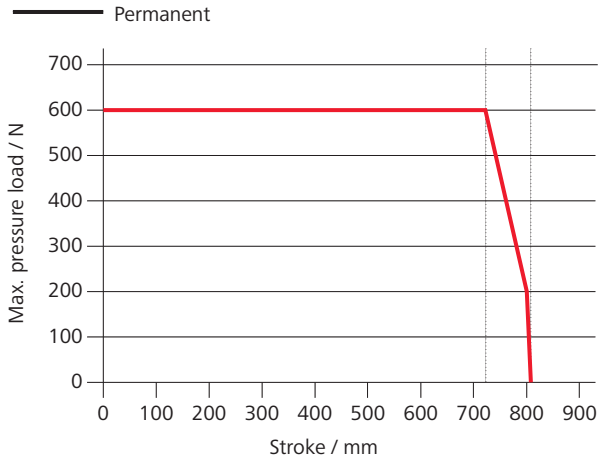
- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- Direct control via 230 V AC
- 2 drive chains for optimal power application to the sash
- Special chain stabilisation
- Relief of pressure on window gasket after closing process
- Electronic force and position control
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

ZERTIFIZIERT EN 12101-2 CE CERTIFIED D+H EURO RWA D+H EURO SHEV

Pressure load diagram



Technical data

	KA 66-TW-K
Supply	230 V AC / +10 % ... -15 %
Input frequency	50 Hz
Performance	45 W / 75 VA
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)
Force of pressure	600 N
Tensile force	600 N
Nominal locking force	3000 N
Service life	20000 double strokes *
Stroke	350 - 800 mm
OPEN running speed	12.2 mm/s
OPEN running speed - SHEV	16.1 mm/s
CLOSED running speed	11.8 mm/s
Type of protection	IP 32
Emission sound pressure level	LpA ≤ 70 dB(A)
Temperature range	-5 °C ... +75 °C
Fire resistance	B300 (30 min / 300 °C)
Housing	Aluminium
Surface	Powder-coated
Connection	Silicone cable
Dimension A	1275 / 1625 mm

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

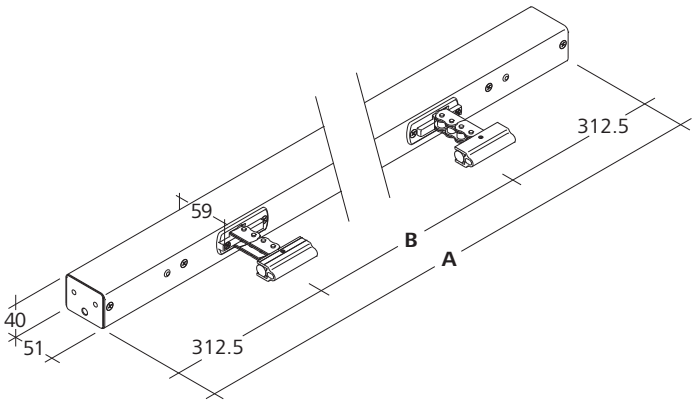
KA-TW-K-BSY+

Potential drive options

You can find the explanations for the icons on the last page.

Dimensions

All specifications in mm



Design

Type	Art. No.	Dimension A	Dimension B	Remark
KA-TW-K-BSY+	26.014.00			Variable equipment possible
KA 66/xxx-TW065-K		1275 mm	650 mm	
KA 66/xxx-TW1-K		1625 mm	1000 mm	

Brackets are not included and have to be ordered separately; suitable brackets starting on page 190

Possible applications

Illustration provided as an example

- Mounted installation
- Sash mounting
- Frame mounting
- Application force
- Application tension

CDP-BSY+ / CDP-TW-BSY+

Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- High-speed function (HS) for especially fast opening windows in case of fire (SHEV)
- Option of up to 4 drives (CDP-BSY+) / 2 drives (CDP-TW-BSY+) in one synchronous group
- Symmetrical chain outlet for easy installation
- Relief of pressure on window gasket after closing process
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

VdS G 513003

DEKRA 5014068.18001

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CNBOP-PIB

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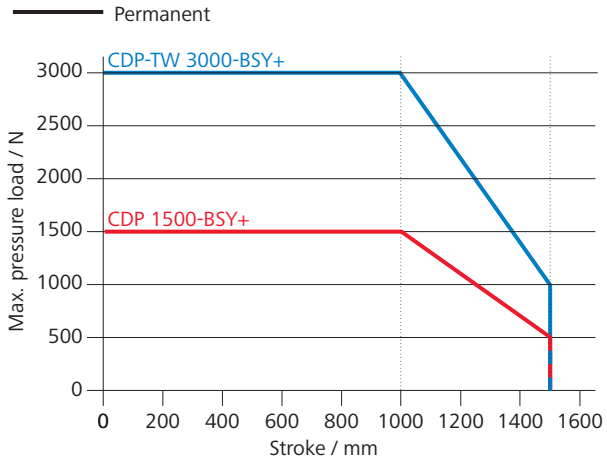
Pressure load diagram



Technical data

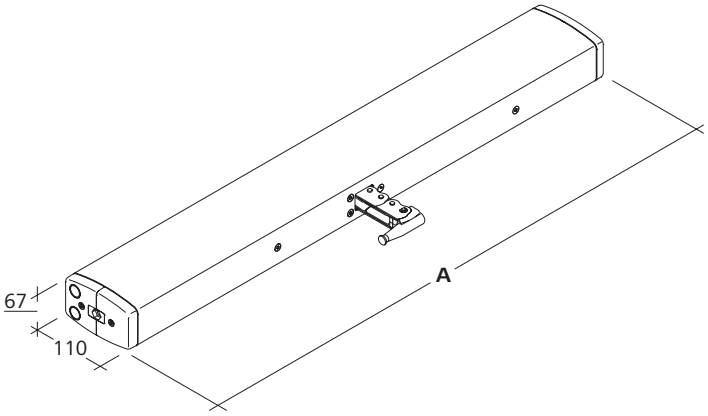
	CDP 1500-BSY+	CDP-TW 3000-BSY+
Supply	24 V DC / ±15 % / 4 A	24 V DC / ±15 % / 8 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Force of pressure	1500 N	3000 N
Tensile force	1000 N	2000 N
Nominal locking force	1500 N	3000 N
Service life	> 10000 double strokes	
Stroke	600 - 1500 mm	
OPEN running speed	6 mm/s	
OPEN running speed - SHEV	17.7 mm/s	
CLOSED running speed	6 mm/s	
Type of protection	IP 32	
Emission sound pressure level	LpA ≤ 70 dB(A)	
Temperature range	-5 °C ... +75 °C	
Fire resistance	B300 (30 min / 300 °C)	
Housing	Aluminium	
Surface	Powder-coated	
Connection	2.5 m silicone cable	
Dimension A	702 - 1264 mm	1672 / 2002 mm

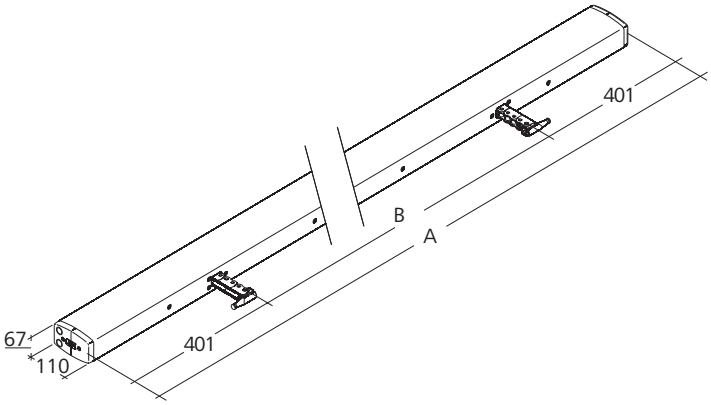
For an illustration of the dimensions, see the next page.

CDP-BSY+ / CDP-TW-BSY+

Dimensions

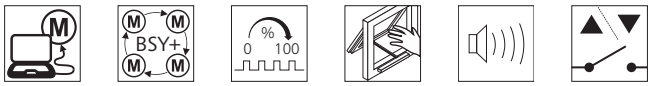
All specifications in mm





Potential drive options

You can find the explanations for the icons on the last page.



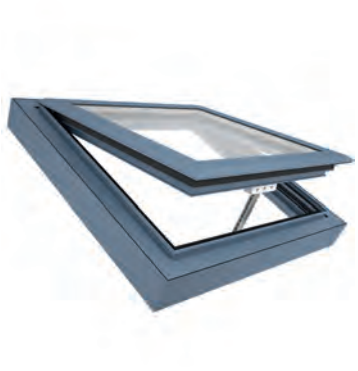
Design

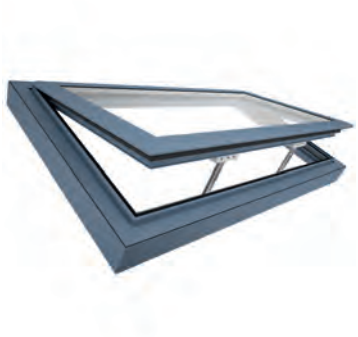
Type	Art. No.	Dimension A	Dimension B	Remark
CDP-BSY+	26.600.00	702 - 1264 mm		Variable equipment possible
CDP-TW-BSY+	26.601.00	1672 / 2002 mm	870 / 1200 mm	Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 194

Possible applications

Illustration provided as an example





- Mounted installation
- Frame mounting
- Application force
- Application tension

CDP-K-BSY+ / CDP-TW-K-BSY+

Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- Direct control via 230 V AC
- High-speed function (HS) for especially fast opening windows in case of fire (SHEV)
- Option of up to 4 drives (CDP-K-BSY+) / 2 drives (CDP-TW-K-BSY+) in one synchronous group
- Symmetrical chain outlet for easy installation
- Relief of pressure on window gasket after closing process
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

DEKRA certified

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ZERTIFIZIERT EN 12101-2 CE CERTIFIED D+H EURO RWA D+H EURO SHEV

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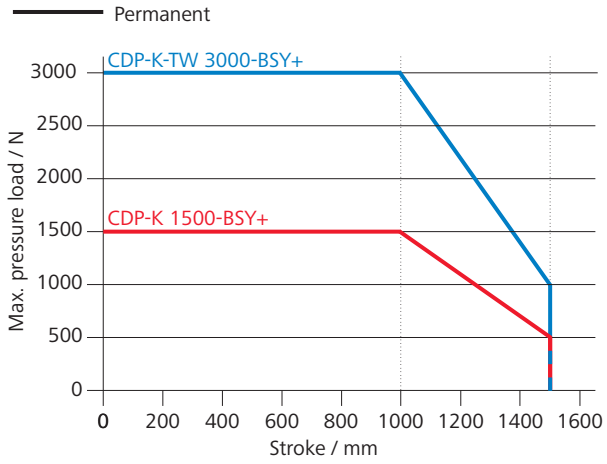
CNBOP-PIB

Pressure load diagram



Technical data

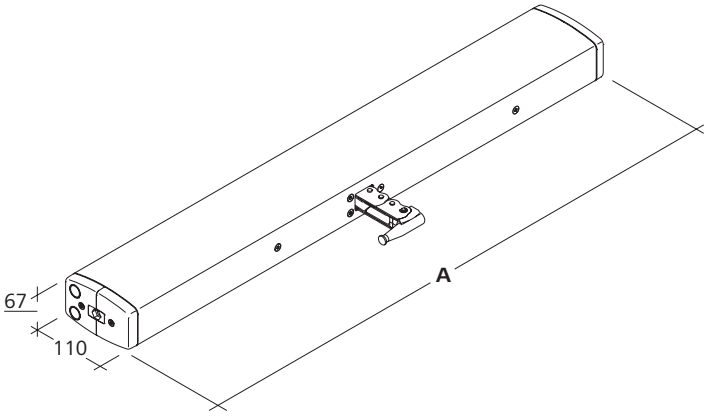
	CDP 1500-K-BSY+	CDP-TW 3000-K-BSY+
Supply	230 V AC / +10 % ... -15 %	
Input frequency	50 Hz	
Performance	80 W / 107 VA	160 W / 214 VA
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Force of pressure	1500 N	3000 N
Tensile force	1000 N	2000 N
Nominal locking force	1500 N	3000 N
Service life	> 10000 double strokes	
Stroke	800 - 1500 mm	
OPEN running speed	6 mm/s	
OPEN running speed - SHEV	17.7 mm/s	
CLOSED running speed	6 mm/s	
Type of protection	IP 32	
Emission sound pressure level	LpA ≤ 70 dB(A)	
Temperature range	-5 °C ... +75 °C	
Fire resistance	B300 (30 min / 300 °C)	
Housing	Aluminium	
Surface	Powder-coated	
Connection	2.5 m silicone cable	
Dimension A	702 - 1264 mm	1672 / 2002 mm

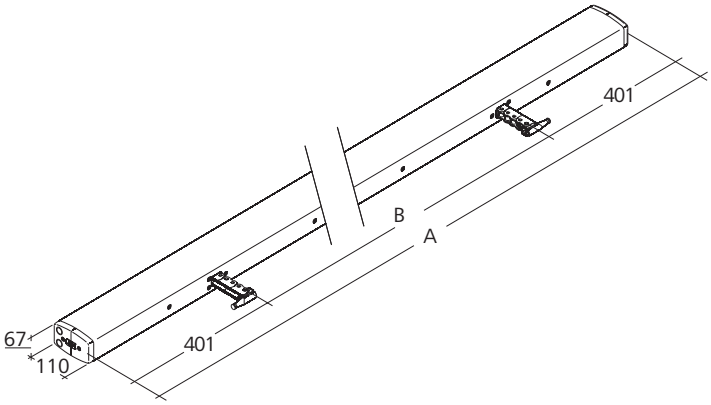
For an illustration of the dimensions, see the next page.

CDP-K-BSY+ / CDP-TW-K-BSY+

Dimensions

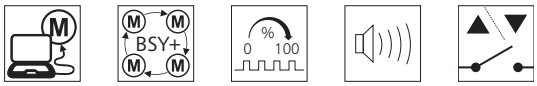
All specifications in mm





Potential drive options

You can find the explanations for the icons on the last page.



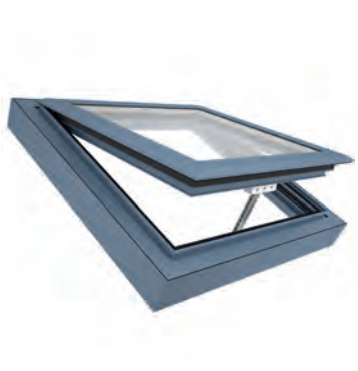
Design

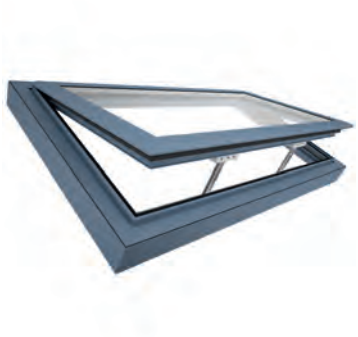
Type	Art. No.	Dimension A	Dimension B	Remark
CDP-K-BSY+	26.602.00	702 - 1264 mm		Variable equipment possible
CDP-TW-K-BSY+	26.603.00	1672 / 2002 mm	870 / 1200 mm	Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 194

Possible applications

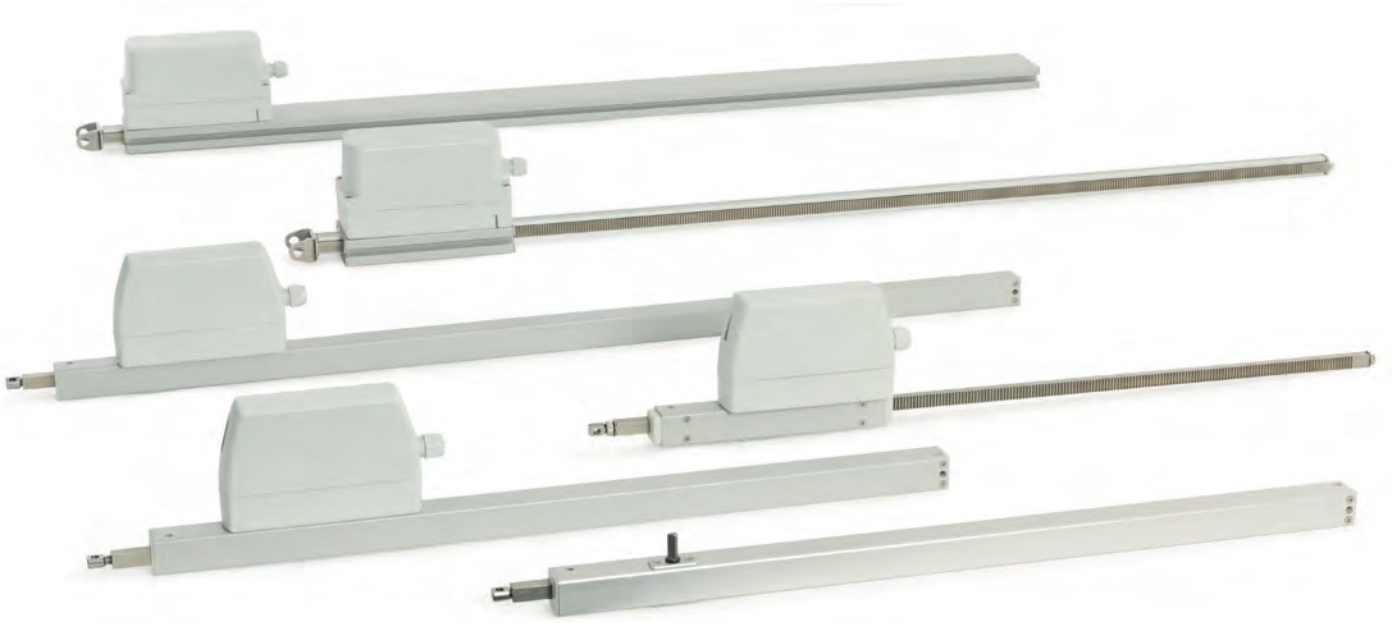
Illustration provided as an example





- Mounted installation
- Frame mounting
- Application force
- Application tension

Rack and pinion drives



ZA Series Rack and pinion drives

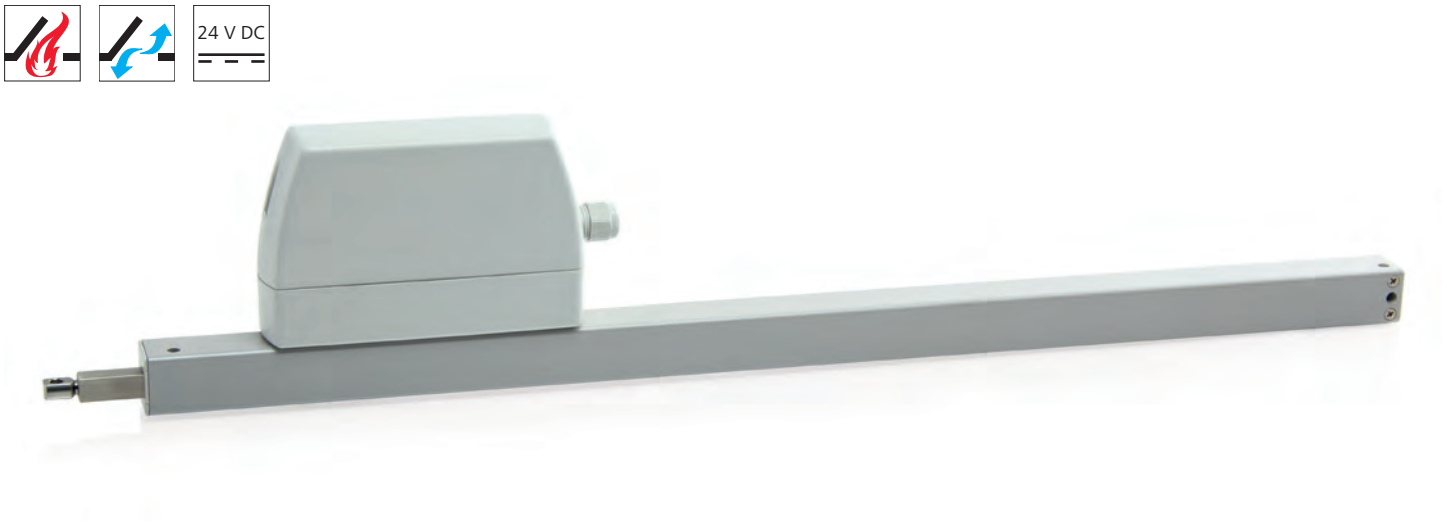
Type	Supply	Max. force of pressure	Max. stroke	Page
ZA-1-PLP	24 V DC	800 N	1000 mm	114
ZA-1-ACB	24 V DC	800 N	1000 mm	118
ZA 105-K	230 V AC	1000 N	800 mm	122
ZA-K-BSY+ *	230 V AC	1500 N	1500 mm	126
ZA-TM			1000 mm	130

DXD Series High-performance rack and pinion drives

Type	Supply	Max. force of pressure	Max. stroke	Page
DXD 300-BSY+ OT-HS	24 V DC	3000 N	1500 mm	132
DXD 300-K-BSY+ HS *	230 V AC	3000 N	1500 mm	132

All maximum specifications only refer to the standard article unless otherwise indicated.
The specifications for the sets are per drive.
* Variant article

ZA-1-PLP



Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With motor electronics controlled via microprocessor
- High-speed function (HS) for especially fast opening windows in case of fire (SHEV) (optionally available)
- Low current consumption thanks to high efficiency
- Option of cable infeed above and below
- Drive unit can be changed from left to right
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

VdS

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ZERTIFIZIERT EN 12101-2 CE CERTIFIED D+H EURO RWA D+H EURO SHEV

Article also available with the following permissions under other article numbers. Technical data may deviate.

CNBOP-PIB

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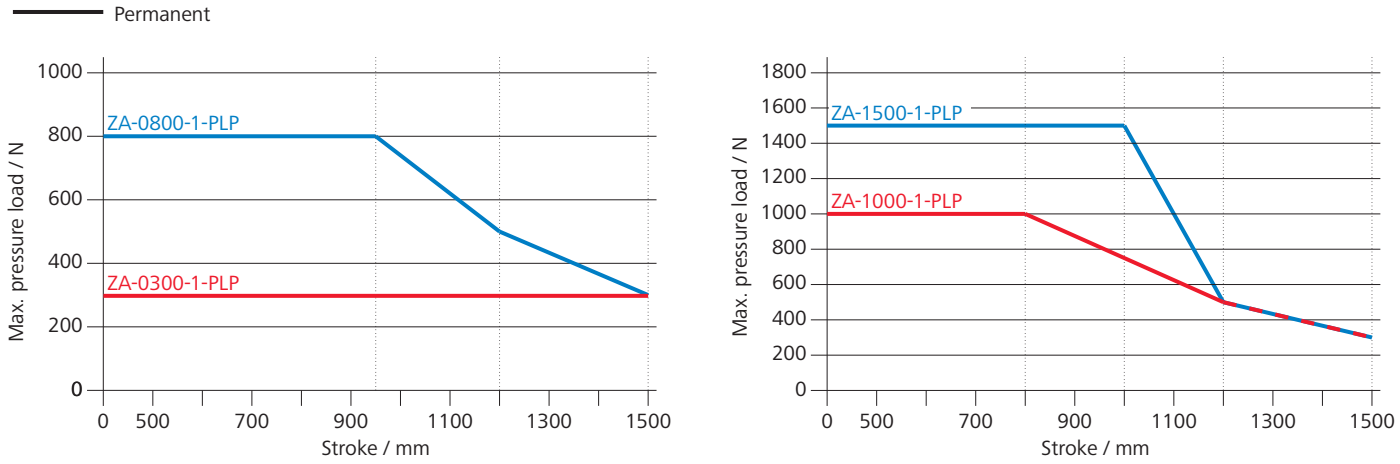
Pressure load diagram



Technical data

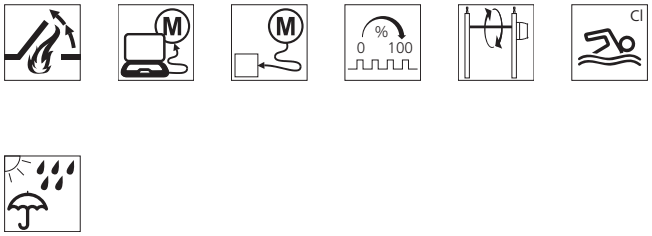
	ZA-0300-1-PLP	ZA-0800-1-PLP	ZA-1000-1-PLP	ZA-1500-1-PLP
Supply	24 V DC / ±15 % / 0.5 A	24 V DC / ±15 % / 1 A	24 V DC / ±15 % / 1.2 A	24 V DC / ±15 % / 1.4 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)			
Force of pressure	300 N	800 N	1000 N	1500 N
Tensile force	300 N	800 N	1000 N	1000 N
Nominal locking force	1100 N			
Service life	20000 double strokes *			
Stroke	100 - 1500 mm			
OPEN running speed	7.1 mm/s			
OPEN running speed - SHEV	8 mm/s			
CLOSED running speed	7.1 mm/s			
Type of protection	IP 65			
Emission sound pressure level	LpA ≤ 51 dB(A)			
Temperature range	-5 °C ... +75 °C			
Fire resistance	B300 (30 min / 300 °C)			
Housing	Aluminium / Polycarbonate			
Surface	Powder-coated			
Colour	White aluminium (~ RAL 9006)			
Connection	2.5 m silicone cable			
Dimension A	225 - 1662 mm			

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

ZA-1-PLP

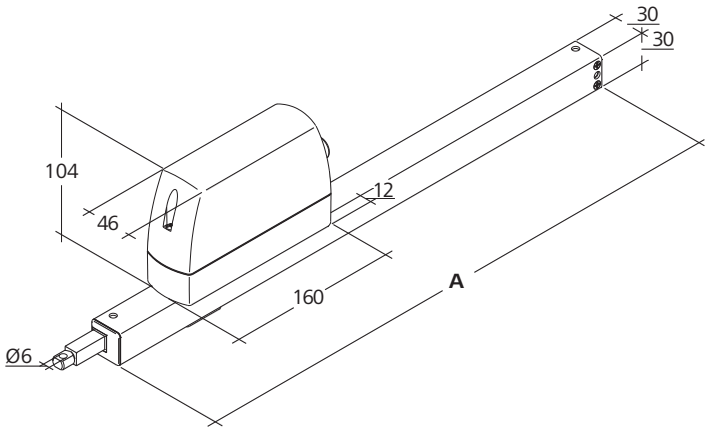
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



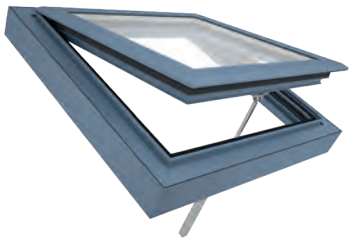
Design

Type	Art. No.	Stroke	Dimension A	Weight	Remark
ZA-0300-0350-1-PLP-R	27.005.05	350 mm	512 mm	1.72 kg	
ZA-0300-0500-1-PLP-R	27.005.10	500 mm	662 mm	1.95 kg	
ZA-0300-0600-1-PLP-R	27.005.15	600 mm	762 mm	2.10 kg	
ZA-0800-0350-1-PLP-R	27.005.30	350 mm	512 mm	1.72 kg	
ZA-0800-0500-1-PLP-R	27.005.35	500 mm	662 mm	1.95 kg	
ZA-0800-0600-1-PLP-R	27.005.40	600 mm	762 mm	2.10 kg	
ZA-0800-0800-1-PLP-R	27.005.45	800 mm	962 mm	2.40 kg	Without holes on bottom, only for topside mounting
ZA-0800-1000-1-PLP-R	27.005.50	1000 mm	1162 mm	2.70 kg	Without holes on bottom, only for topside mounting
ZA-1-PLP	27.005.00				Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 198

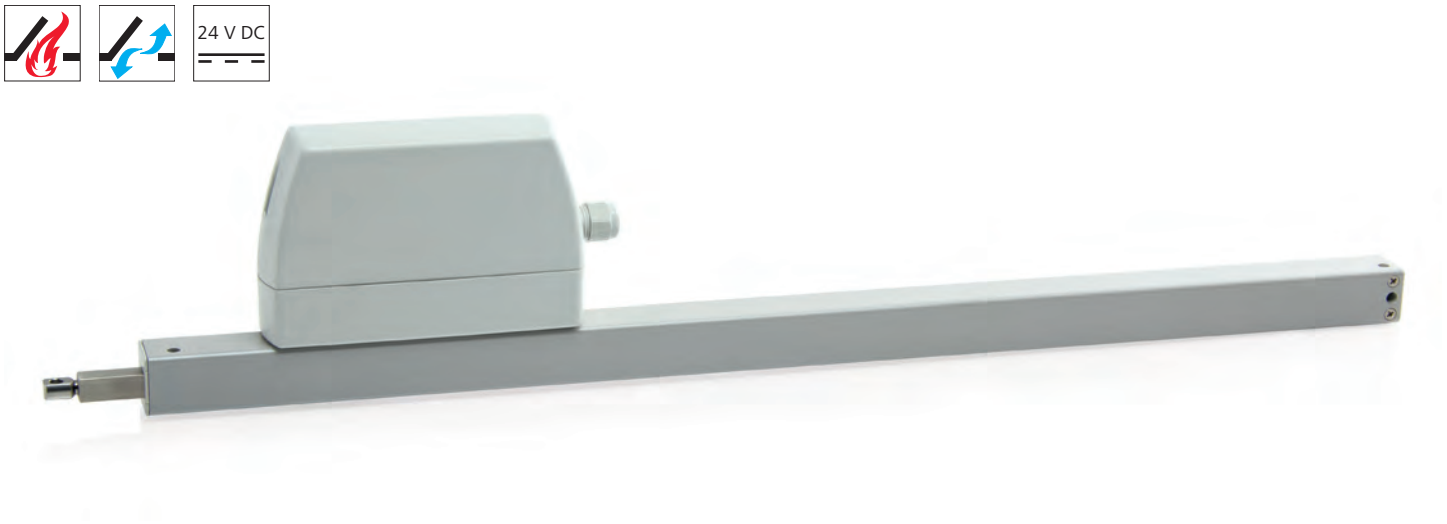
Possible applications

Illustration provided as an example



- Mounted installation
- Sash mounting
- Frame mounting
- Side installation
- Installation opposite the hinge
- Application force
- Application tension

ZA-1-ACB



Performance features

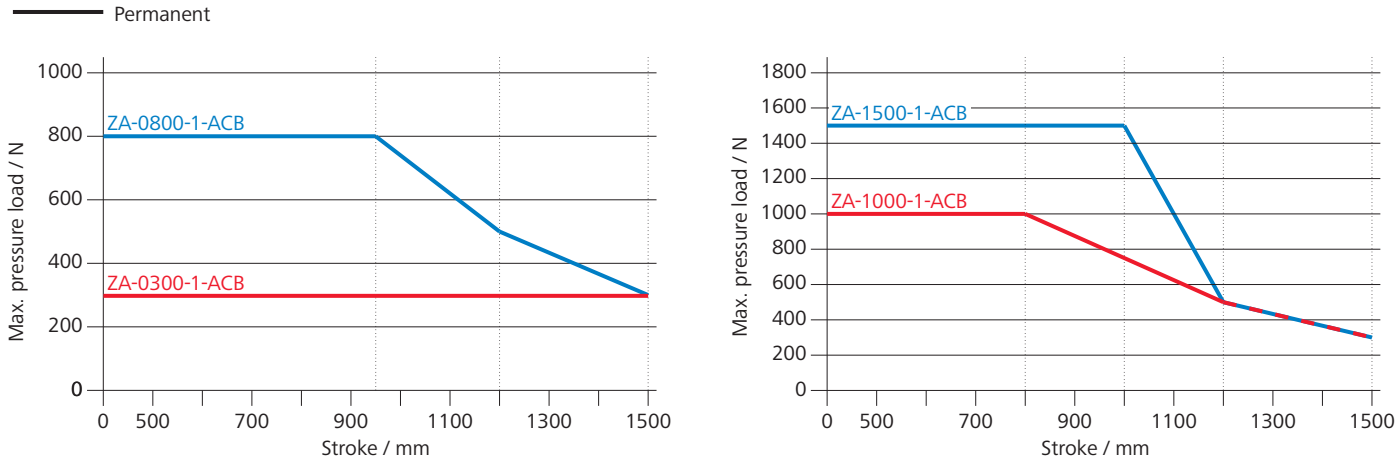
- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- High-speed function (HS) for especially fast opening windows in case of fire (SHEV) (optionally available)
- Option of up to 8 drives in one synchronous group
- Option of cable infeed above and below
- Drive unit can be changed from left to right
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)
- Integrated ACB (Advanced Communication Bus) bus interface with Modbus RTU protocol
- The drive is integrated directly via open bus communication through the ACB (Advanced Communication Bus), e.g. in a building management system

Approvals / Certificates

Find out about permission details from your D+H Partner.

ZERTIFIZIERT EN 12101-2 CE CERTIFIED D+H EURO RWA D+H EURO SHEV

Pressure load diagram



Technical data

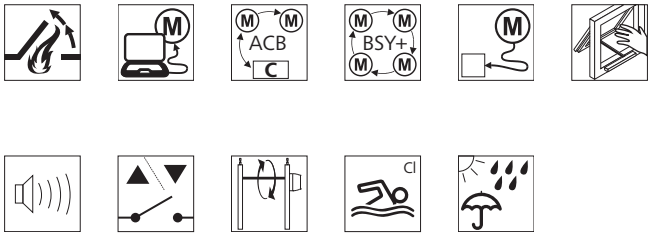
	ZA-0300-1-ACB	ZA-0800-1-ACB	ZA-1000-1-ACB	ZA-1500-1-ACB
Supply	24 V DC / ±15 % / 0.5 A	24 V DC / ±15 % / 1 A	24 V DC / ±15 % / 1.2 A	24 V DC / ±15 % / 1.4 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)			
Force of pressure	300 N	800 N	1000 N	1500 N
Tensile force	300 N	800 N	1000 N	1000 N
Nominal locking force	1100 N			
Service life	20000 double strokes *			
Stroke	100 - 1500 mm			
OPEN running speed	7 mm/s			
OPEN running speed - SHEV	7 mm/s			
CLOSED running speed	7 mm/s			
Type of protection	IP 65			
Emission sound pressure level	LpA ≤ 51 dB(A)			
Temperature range	-5 °C ... +75 °C			
Fire resistance	B300 (30 min / 300 °C)			
Housing	Aluminium / Polycarbonate			
Surface	Powder-coated			
Colour	White aluminium (~ RAL 9006)			
Connection	2.5 m silicone cable			
Dimension A	225 - 1662 mm			

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

ZA-1-ACB

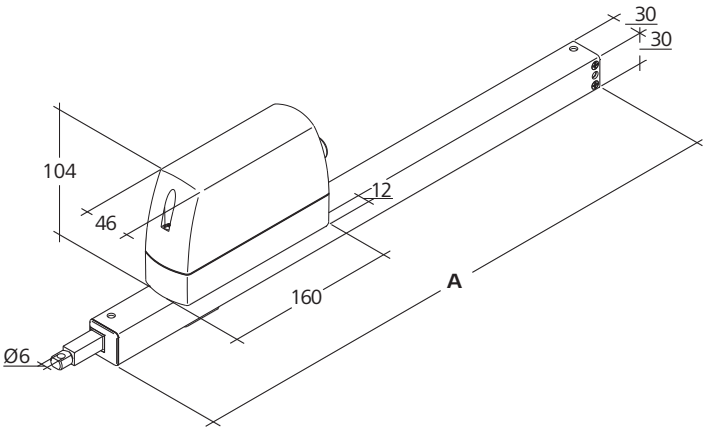
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



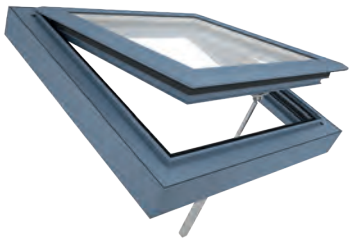
Design

Type	Art. No.	Stroke	Dimension A	Weight	Remark
ZA-0800-0500-1-ACB M1-R	27.011.05	500 mm	662 mm	1.95 kg	
ZA-0800-0500-1-ACB M2-R	27.011.25	500 mm	662 mm	1.95 kg	
ZA-0800-0500-1-ACB S1-L	27.011.45	500 mm	662 mm	1.95 kg	
ZA-0800-0600-1-ACB M1-R	27.011.10	600 mm	762 mm	2.10 kg	
ZA-0800-0600-1-ACB M2-R	27.011.30	600 mm	762 mm	2.10 kg	
ZA-0800-0600-1-ACB S1-L	27.011.50	600 mm	762 mm	2.10 kg	
ZA-0800-0800-1-ACB M1-R	27.011.15	800 mm	962 mm	2.40 kg	Without holes on bottom, only for topside mounting
ZA-0800-0800-1-ACB M2-R	27.011.35	800 mm	962 mm	2.40 kg	Without holes on bottom, only for topside mounting
ZA-0800-0800-1-ACB S1-L	27.011.55	800 mm	962 mm	2.40 kg	Without holes on bottom, only for topside mounting
ZA-0800-1000-1-ACB M1-R	27.011.20	1000 mm	1162 mm	2.70 kg	Without holes on bottom, only for topside mounting
ZA-0800-1000-1-ACB M2-R	27.011.40	1000 mm	1162 mm	2.70 kg	Without holes on bottom, only for topside mounting
ZA-0800-1000-1-ACB S1-L	27.011.60	1000 mm	1162 mm	2.70 kg	Without holes on bottom, only for topside mounting
ZA-1-ACB	27.011.00				Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 198

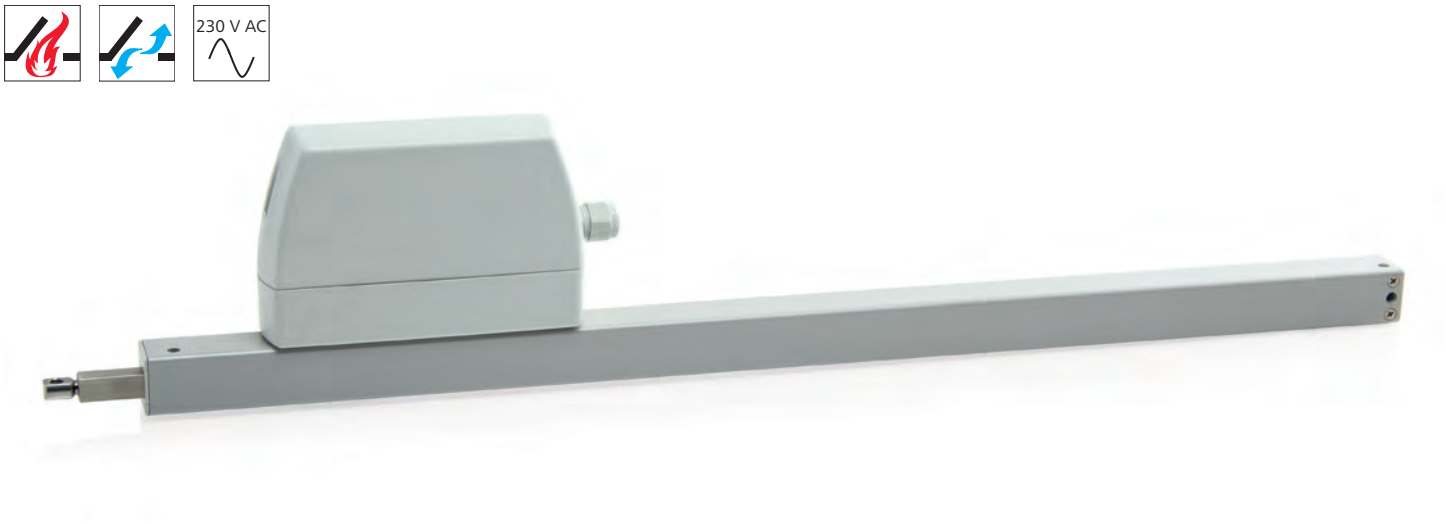
Possible applications

Illustration provided as an example



- Mounted installation
- Sash mounting
- Frame mounting
- Side installation
- Installation opposite the hinge
- Application force
- Application tension
- Trapezoidal application

ZA 105-K



Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- Direct control via 230 V AC
- Low current consumption thanks to high efficiency
- Option of cable infeed above and below
- Drive unit can be changed from left to right
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

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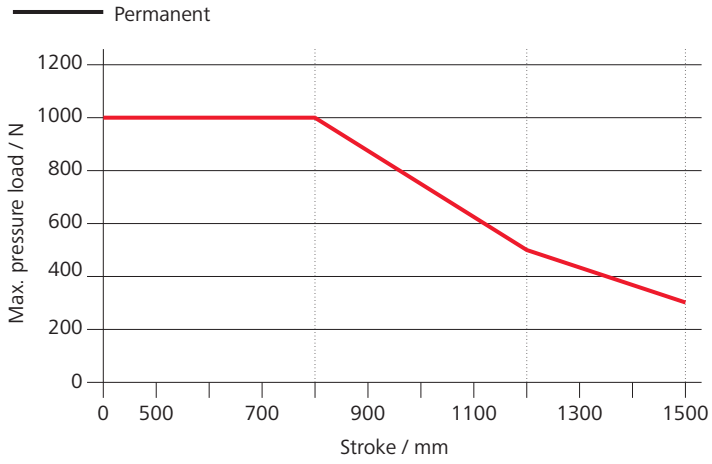
Pressure load diagram



Technical data

	ZA 105-K
Supply	230 V AC / +10 % ... -15 %
Input frequency	50 Hz
Performance	27 W / 30 VA
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)
Force of pressure	1000 N
Tensile force	1000 N
Nominal locking force	1100 N
Service life	20000 double strokes *
Stroke	100 - 1500 mm
OPEN running speed	10 mm/s
CLOSED running speed	10 mm/s
Type of protection	IP 65
Emission sound pressure level	LpA ≤ 51 dB(A)
Temperature range	-5 °C ... +75 °C
Housing	Aluminium / Polycarbonate
Surface	Powder-coated
Colour	White aluminium (~ RAL 9006)
Connection	2.5 m silicone cable
Dimension A	225 - 1662 mm

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

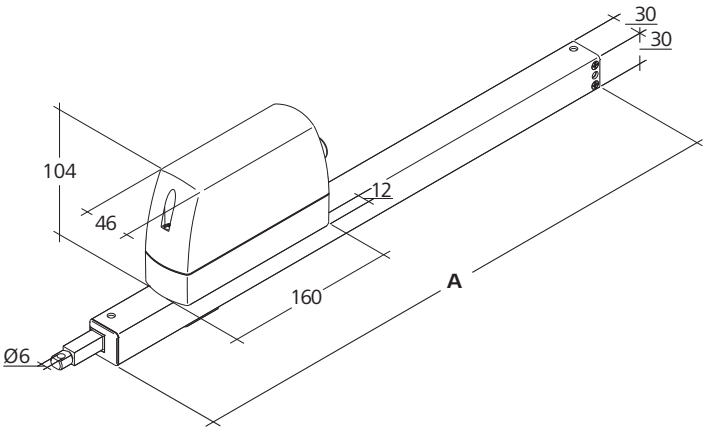
ZA 105-K

Potential drive options

You can find the explanations for the icons on the last page.

Dimensions

All specifications in mm



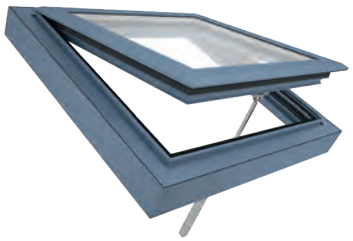
Design

Type	Art. No.	Stroke	Dimension A	Weight	Remark
ZA 105/350-K	27.007.05	350 mm	512 mm	1.72 kg	
ZA 105/500-K	27.007.10	500 mm	662 mm	1.95 kg	
ZA 105/800-K	27.007.15	800 mm	962 mm	2.40 kg	Without holes on bottom, only for topside mounting
ZA-K	27.007.02				Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 198

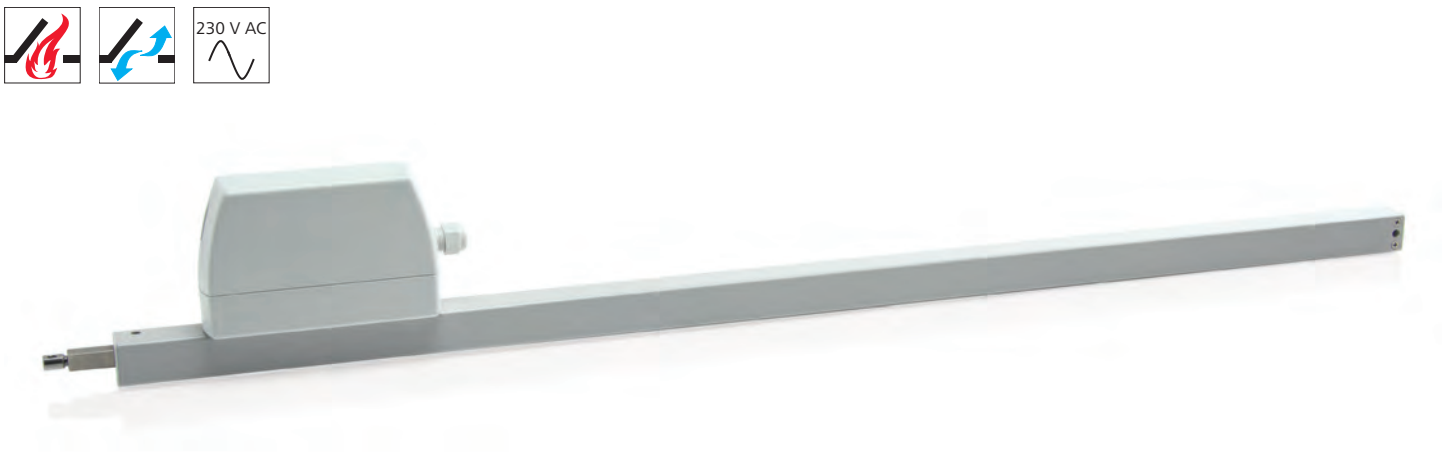
Possible applications

Illustration provided as an example



- Mounted installation
- Sash mounting
- Frame mounting
- Side installation
- Installation opposite the hinge
- Application force
- Application tension

ZA-K-BSY+



Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- High-speed function (HS) for especially fast opening windows in case of fire (SHEV) (optionally available)
- Direct control via 230 V AC
- Option of up to 4 drives in one synchronous group
- Low current consumption thanks to high efficiency
- Option of cable infeed above and below
- Drive unit can be changed from left to right
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

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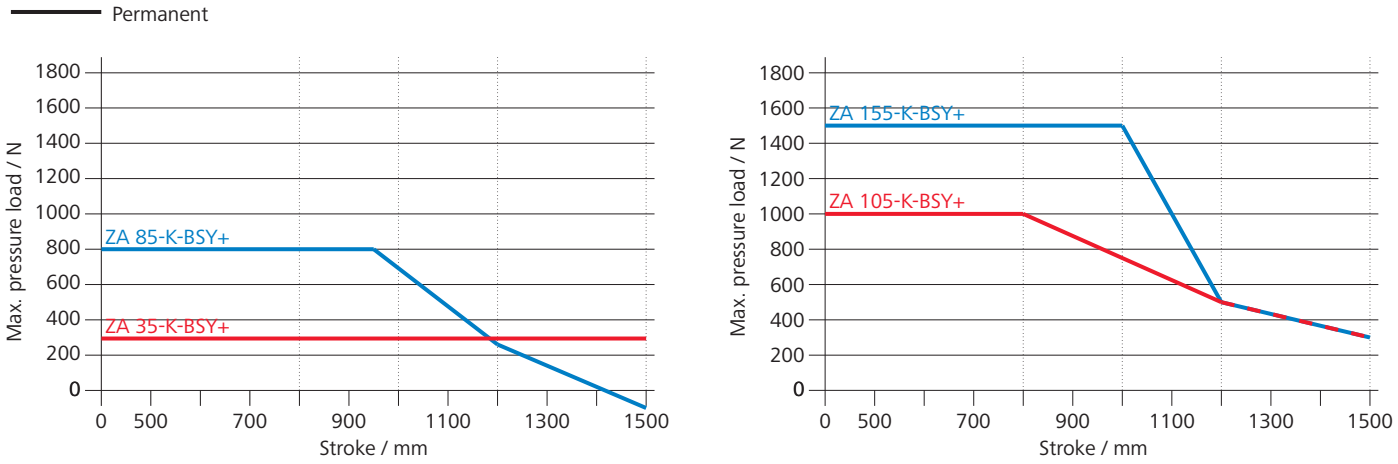
Article also available with the following permissions under other article numbers. Technical data may deviate.

Pressure load diagram



Technical data

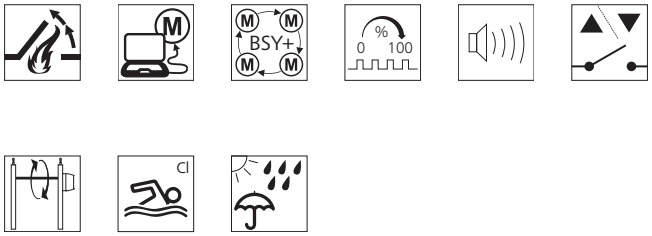
	ZA 35-K-BSY+	ZA 85-K-BSY+	ZA 105-K-BSY+	ZA 155-K-BSY+
Supply	230 V AC / +10 % ... -15 %			
Input frequency	50 Hz			
Performance	20 W / 30 VA	30 W / 45 VA	35 W / 55 VA	45 W / 70 VA
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)			
Force of pressure	300 N	800 N	1000 N	1500 N
Tensile force	300 N	800 N	1000 N	1000 N
Nominal locking force	1100 N			
Service life	20000 double strokes *			
Stroke	100 - 1500 mm			
OPEN running speed	7.1 mm/s			
OPEN running speed - SHEV	8 mm/s			
CLOSED running speed	7.1 mm/s			
Type of protection	IP 65			
Emission sound pressure level	LpA ≤ 51 dB(A)			
Temperature range	-5 °C ... +75 °C			
Fire resistance	B300 (30 min / 300 °C)			
Housing	Aluminium / Polycarbonate			
Surface	Powder-coated			
Colour	White aluminium (~ RAL 9006)			
Connection	2.5 m silicone cable			
Dimension A	225 - 1662 mm			

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

ZA-K-BSY+

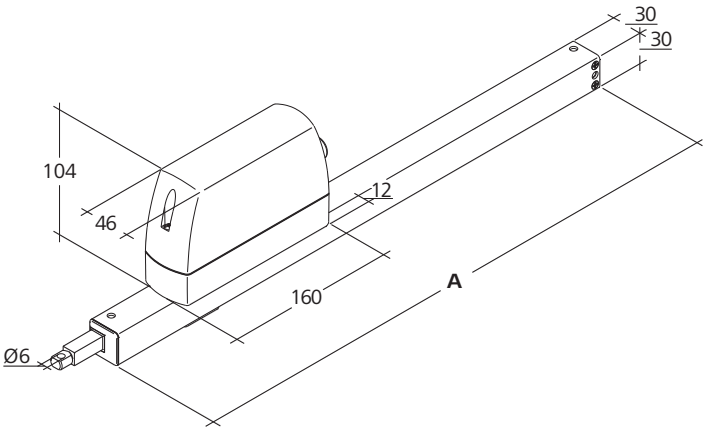
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



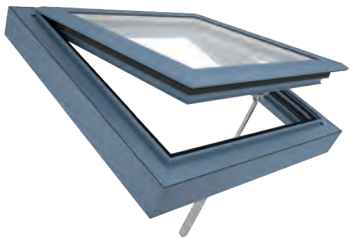
Design

Type	Art. No.	Dimension A	Remark
ZA-K-BSY+	27.007.01	225 - 1662 mm	Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 198

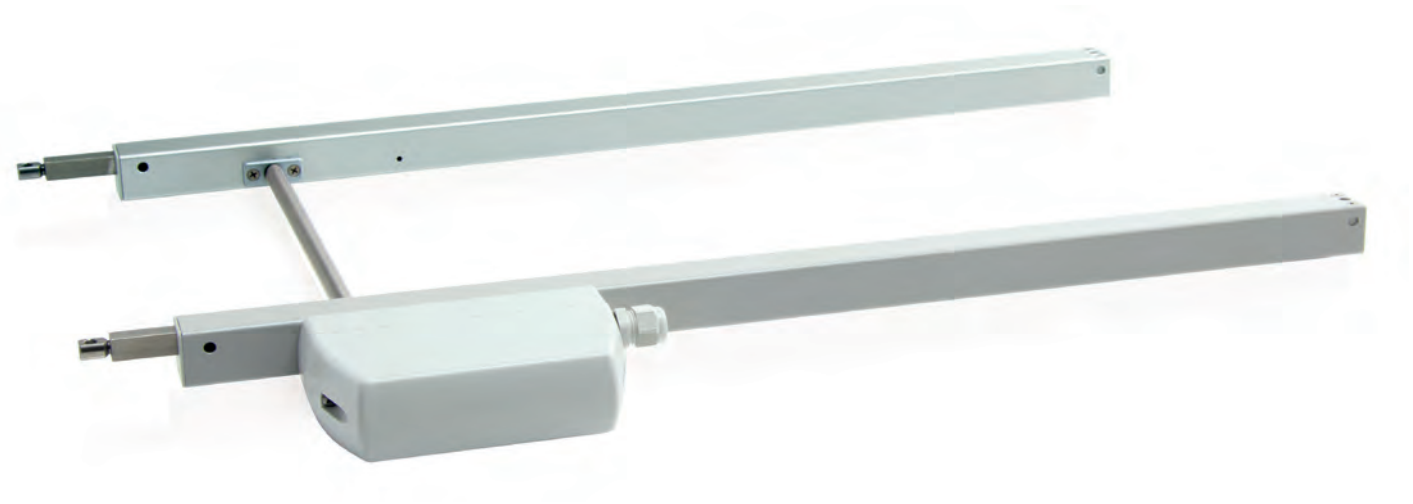
Possible applications

Illustration provided as an example



- Mounted installation
- Sash mounting
- Frame mounting
- Side installation
- Installation opposite the hinge
- Application force
- Application tension

ZA-TM



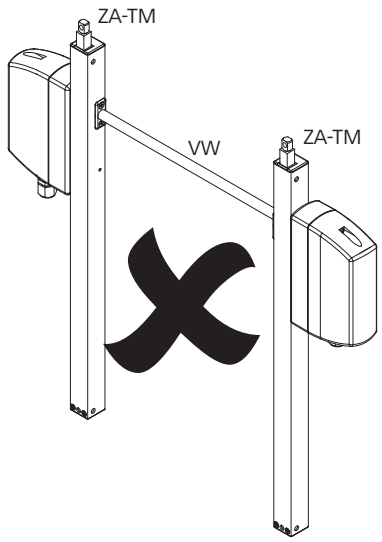
Performance features

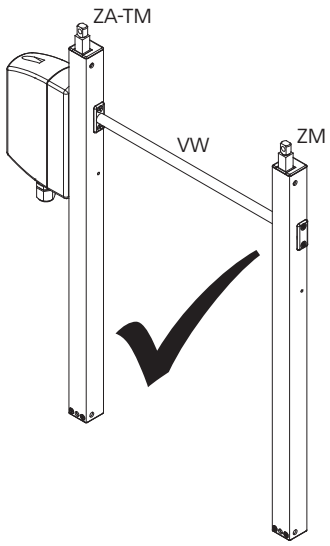
- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- For mechanically connecting to tandem drives using a VA connecting shaft
- Tandem version for heavy loads, can be combined with: ZA drive (ZA-TM), ZA slave unit (ZM) and connecting shaft (VW)
- High-speed function (HS) for especially fast opening windows in case of fire (SHEV)
- Uniform load distribution on window sashes
- Drive unit can be changed from left to right

Potential drive options

You can find the explanations for the icons on the last page.

Example of application





Usable drives

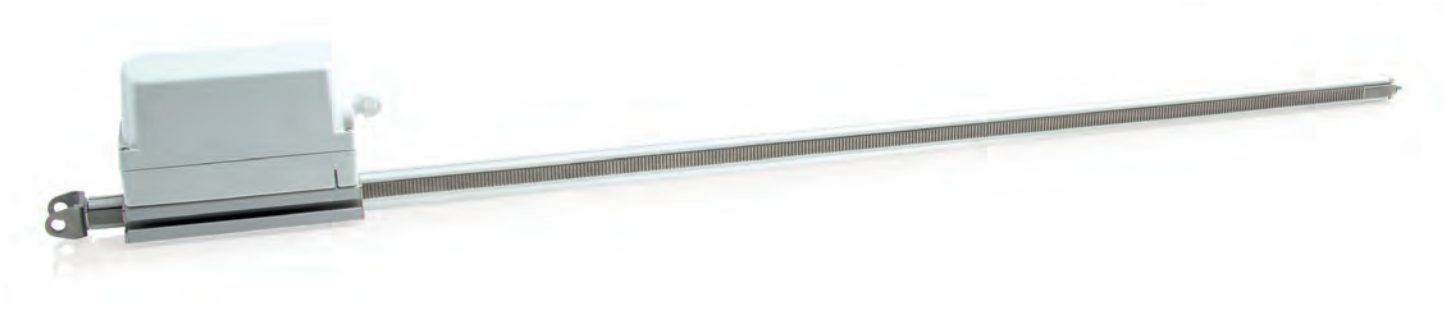
Type	Art. No.	
ZA-1-PLP	27.005.00	114
ZA-1-ACB	27.011.00	118
ZA-K	27.007.02	122
ZA-K-BSY+	27.007.01	126

Order drive with “Option TM”

Design

Type	Art. No.	Stroke	Length	Diameter	Weight	Remark
ZM 500	20.005.00	500 mm			1.10 kg	
ZM 800	20.005.10	800 mm			1.60 kg	Only for topside mounting
ZM 1000	20.005.20	1000 mm			1.90 kg	Only for topside mounting
ZM	20.009.10					Variable equipment possible
VW 1018	20.030.00		1018 mm	12 mm	0.48 kg	
VW 1518	20.030.10		1518 mm	12 mm	0.71 kg	
VW 2000	20.030.20		2000 mm	12 mm	0.95 kg	
VW	20.030.21					Variable equipment possible

DXD 300-BSY+ HS / DXD 300-K-BSY+ HS



Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- Direct control via 230 V AC
- High-speed function (HS) for especially fast opening windows in case of fire (SHEV)
- Option of up to 4 drives in one synchronous group
- Groove in the drive tube for flexible installation and configuration of the swivel range
- Option of cable infeed above and below
- Programmable drive functions and different drive parameters
- Running speed in CLOSED direction decreases to 5 mm/s (passive closing edge protection)
- Time-controlled reversing when an obstacle is detected in the CLOSED direction (active closing edge protection)

Approvals / Certificates

Find out about permission details from your D+H Partner.

DEKRA certified
5014068.18004

ZERTIFIZIERT EN 12101-2 CE CERTIFIED D+H EURO RWA D+H EURO SHEV

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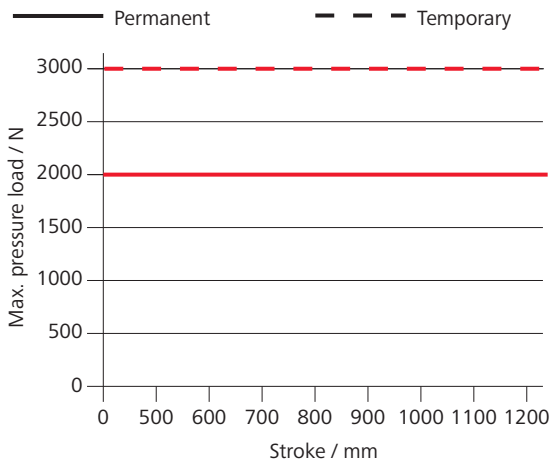
Pressure load diagram



Technical data

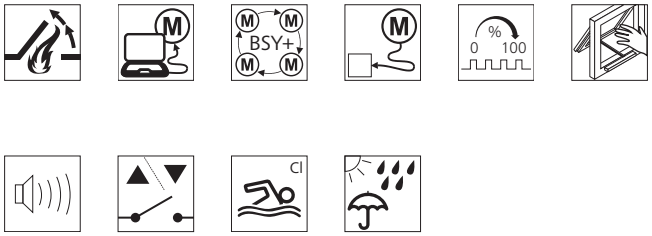
	DXD 300-BSY+ HS	DXD 300-K-BSY+ HS
Supply	24 V DC / ±15 % / 1.4 A	230 V AC / +10 % ... -15 % / 175 VA
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Force of pressure	3000 N	
Tensile force	2000 N	
Nominal locking force	2200 N	
Service life	20000 double strokes *	
Stroke	500 - 1500 mm	
OPEN running speed	7.1 mm/s	
OPEN running speed - HS	17 mm/s	
CLOSED running speed	7.1 mm/s	
Type of protection	IP 64	
Emission sound pressure level	LpA ≤ 70 dB(A)	
Temperature range	-5 °C ... +75 °C	
Fire resistance	B300 (30 min / 300 °C)	
Housing	Aluminium / Polycarbonate	
Surface	Powder-coated	
Connection	Silicone cable	
Dimension A	706 - 1706 mm	

For an illustration of the dimensions, see the next page.
* For vertical use, please consult with D+H Sales!

DXD 300-BSY+ HS / DXD 300-K-BSY+ HS

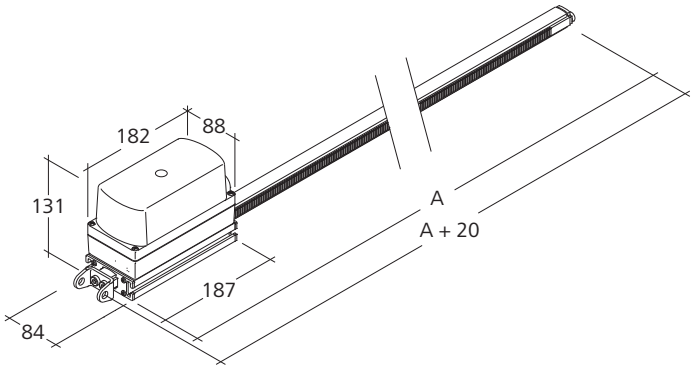
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



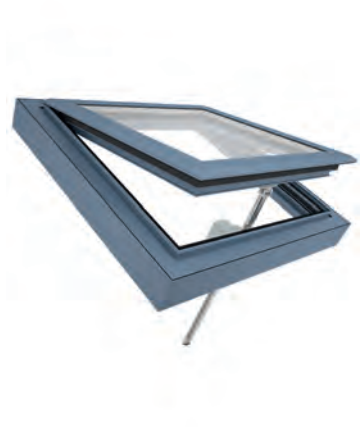
Design

Type	Art. No.	Dimension A	Remark
DXD 300/1000-BSY+ OT-HS	20.027.20	706 - 1706 mm	
DXD 300-BSY+	20.022.06	706 - 1706 mm	Variable equipment possible
DXD 300-K-BSY+	20.022.08	706 - 1706 mm	Variable equipment possible

Brackets are not included and have to be ordered separately; suitable brackets starting on page 206

Possible applications

Illustration provided as an example



- Mounted installation
- Sash mounting
- Frame mounting
- Side installation
- Installation opposite the hinge
- Application force
- Application tension

Fitting drives

FRA Series Window locking drives

Type	Supply	Torque	Page
FRA 11-BSY+	24 V DC	10 Nm	138

VLD Series Linear lock drives

Type	Supply	Locking force	Page
VLD 51	24 V DC	500 N	140
VLD 51-BSY+	24 V DC	500 N	140

BDT Series Fitting drives

Type	Supply	Torque	Page
BDT 010-RC	24 V DC	10 Nm	142
BDT 010-EO	24 V DC	10 Nm	142

FRA 11-BSY+

Performance features

- With motor electronics controlled via microprocessor for communication and sequence control of connected BSY+ and PLP window drives for opening windows
- To be used in conjunction with an internal chamber gearbox and 43 mm mounting distance
- BRV (for PLP) or VP (for BSY+ / ACB) option required for connected window drive
- Up to 4 FRA 11-BSY+ drives on one window possible
- Position display for the locking mechanism
- LED status display for the drive
- Automatic locking mechanism for the window
- Increased burglary protection

Approvals / Certificates

Find out about permission details from your D+H Partner.

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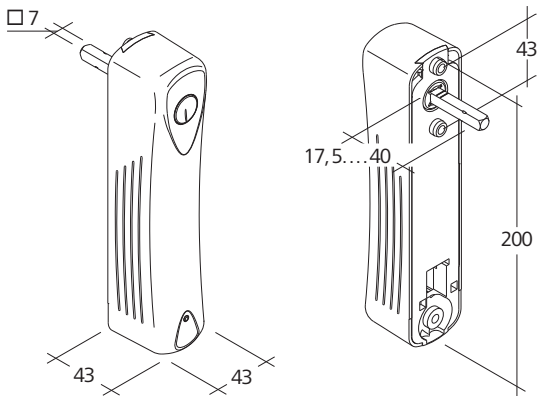
Potential drive options

You can find the explanations for the icons on the last page.

Dimensions

All specifications in mm



Technical data

	FRA 11-BSY+
Supply	24 V DC / ±15 % / 1 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)
Torque	10 Nm
Rotation angle	90° / 180°
Service life	> 10000 cycles
Type of protection	IP 40
Emission sound pressure level	LpA ≤ 70 dB(A)
Temperature range	-5 °C ... +75 °C
Fire resistance	B300 (30 min / 300 °C)
Housing	Polyamide
Surface	Painted
Colour	Silver (~ RAL 9006)
Connection	2.5 m silicone cable
W x H x D	43 x 200 x 43 mm
Weight	0.75 kg

Design

Type	Art. No.	Remark
FRA 11-BSY+	24.000.11	
FRA-BSY+	24.000.10	Variable equipment possible

VLD 51 / VLD 51-BSY+

Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- Up to 6 VLD BSY+ drives on one window possible
- For operating standard latch pane fittings
- Programmable drive functions and different drive parameters (VLD 51-BSY+)
- Manual emergency unlocking possible
- Configurable locking direction on the drive
- Increased burglary protection

Approvals / Certificates

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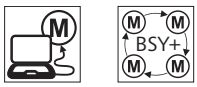
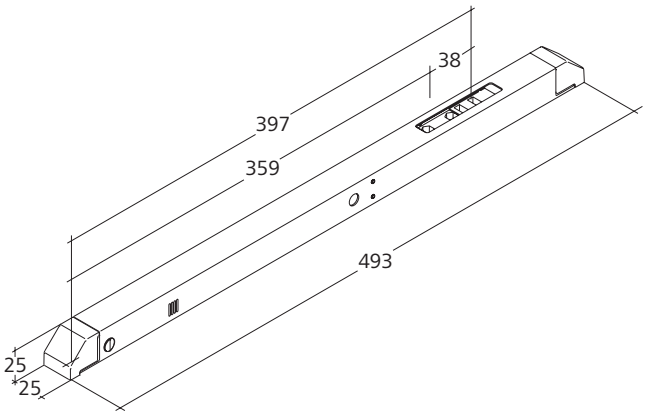
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



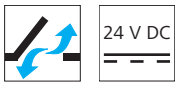
Technical data

	VLD 51	VLD 51-BSY+
Supply	24 V DC / ±20 % / 1 A	
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Locking force	500 N	
Breakaway force	1000 N	
Service life	> 10000 cycles	
OPEN running speed	4.2 mm/s	3.3 mm/s
OPEN running speed - SHEV	-	4.2 mm/s
CLOSED running speed	4.2 mm/s	3.3 mm/s
Type of protection	IP 50	
Emission sound pressure level	LpA ≤ 70 dB(A)	
Temperature range	-5 °C ... +50 °C	
Fire resistance	B300 (30 min / 300 °C)	
Housing	V2A stainless steel	
Connection	2.5 m silicone cable	
W x H x D	493 x 25 x 25 mm	

Design

Type	Art. No.	Stroke	Weight	Remark
VLD 51/038	23.060.50	38 mm	1.20 kg	
VLD	23.060.00		1.20 kg	Variable equipment possible
VLD 51/038-BSY+	23.060.70	38 mm	1.20 kg	
VLD-BSY+	23.060.80		1.20 kg	Variable equipment possible
PI-VLD	23.066.10		0.20 kg	Integrated installation
RE-VLD	23.066.00		0.20 kg	Mounted installation
VLD-BS009-IM	24.AFK.KS		0.20 kg	Mounted installation

BDT 010-RC / BDT 010-EO



Performance features

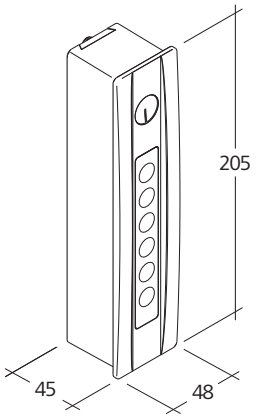
- For opening and closing the activPilot Comfort PADM turn-tilt fitting with parallel action from Winkhaus
- Wireless receiver with innovative EnOcean technology (BDT 010-EO)
- Flexible window operation via wireless remote control or touch surface
- Selection of various automatic functions using touch control
- Automated, user-independent and energy efficiency ventilation in accordance with DIN 1946-6
- Particularly quiet function
- High-quality design for harmonious integration in modern architecture
- High-quality metal front panel
- Window swivel function at the push of a button
- Drive for DIN left or DIN right window

Accessories

Power supply unit

Dimensions

All specifications in mm



Technical data

	BDT 010-RC	BDT 010-EO
Supply	24 V DC / ±15 % / 1 A	
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Torque	10 Nm	
Rotation angle	90° / 180°	
Service life	> 40000 cycles	
Type of protection	IP 40	
Emission sound pressure level	LpA ≤ 70 dB(A)	
Temperature range	-5 °C ... +60 °C	
Transmitting power	Approx. 1 mW (e.r.p)	
Transmitter range	50 m	
Housing	ABS-PC / Die-cast zinc	
Surface	Painted	
Connection	Plug-in screw terminal	
W x H x D	48 x 205 x 45 mm	
Weight	0.75 kg	

Design

Type	Art. No.	Colour
BDT 010-RC (WH/WH)	24.000.31	White / White (~ RAL 9016 / ~ RAL 9016)
BDT 010-RC (WH/SR)	24.000.32	White / Silver (~ RAL 9016 / ~ RAL 9007)
BDT 010-RC (GY/SR)	24.000.33	Grey / Silver (~ RAL 7021 / ~ RAL 9007)
BDT 010-EO (WH/WH)	24.000.39	White / White (~ RAL 9016 / ~ RAL 9016)
BDT 010-EO (WH/SR)	24.000.38	White / Silver (~ RAL 9016 / ~ RAL 9007)
BDT 010-EO (GY/SR)	24.000.37	Grey / Silver (~ RAL 7021 / ~ RAL 9007)

Special drives

DDS Series Door opener drives

Type	Supply	Max. force of pressure	Max. stroke	Page
DDS 54	24 V DC	500 N	500 mm	146

SHD Series Side-hung vent drives

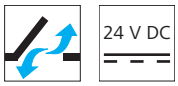
Type	Supply	Max. force of pressure	Max. stroke	Page
SHD 54	24 V DC	500 N	450 mm	148
SHD 54-BSY+ Set	24 V DC	500 N	450 mm	148

LD Series Louvre window drives

Type	Supply	Max. nominal force	Max. stroke	Page
LDX-1-PLP *	24 V DC	1800 N	90 mm	150
LDx-5 *	230 V AC	1800 N	90 mm	150
LDx-1-ACB *	24 V DC	1800 N	90 mm	152
LDx-5-ACB *	230 V AC	1800 N	90 mm	152
LDx *	24 V DC	900 N	80 mm	154

All maximum specifications only refer to the standard article unless otherwise indicated.
The specifications for the sets are per drive.
* Variant article

DDS 54



Performance features

- For opening single-leaf doors up to 90°
- With motor electronics controlled via microprocessor
- High force of pressure due to special chain stabilisation
- Control output for on-site electronic door release
- Guarantees the necessary supply air and open escape routes
- The door remains operable by hand
- Automatic motor lock, Ikon or Ehem, can be combined
- Programmable drive functions and different drive parameters
- Additional passive and active anti-trap protection system for the main closing edges
- Bracket set included

Approvals / Certificates

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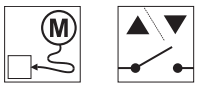
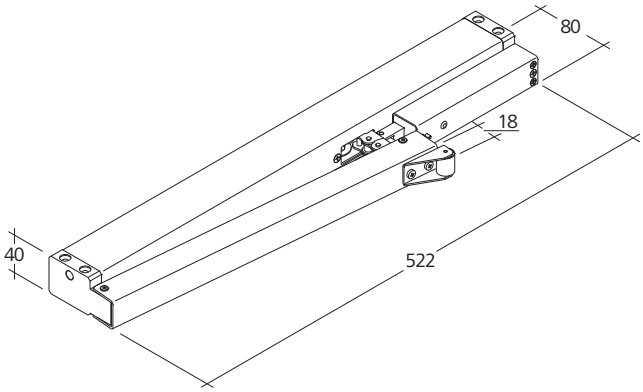
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



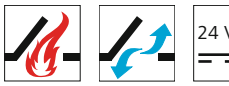
Technical data

	DDS 54
Supply	24 V DC / ±15 % / 1 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)
Force of pressure	500 N
Tensile force	500 N
Service life	20000 double strokes
OPEN running speed	11.8 mm/s
CLOSED running speed	11.8 mm/s
Type of protection	IP 32
Emission sound pressure level	LpA ≤ 70 dB(A)
Temperature range	-5 °C ... +75 °C
Fire resistance	B300 (30 min / 300 °C)
Housing	Aluminium
Surface	Powder-coated
Colour	White aluminium (~ RAL 9006)
Connection	2.5 m silicone cable
W x H x D	522 x 40 x 80 mm
Weight	2.00 kg

Design

Type	Art. No.	Stroke	Remark
DDS 54/500	23.002.40	500 mm	
DDS-PLP	26.500.00	500 mm	Variable equipment possible

SHD 54 / SHD 54-BSY+ Set



Performance features

- For opening and closing wide side-hung vents
- For sash sizes to 1.2 x 1 m (SHD 54) / 1.2 x 2 m (SHD 54-BSY+ Set)
- Synchronised dual chain drive set (SHD 54-BSY+ Set)
- With motor electronics controlled via microprocessor
- Opening the windows to 65° in less than 30 sec.
- Locking mechanism for the window in conjunction with window locking drive (optional)
- Configurable locking direction on the drive
- Programmable drive functions and different drive parameters
- Bracket set included

Approvals / Certificates

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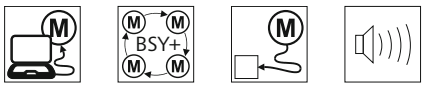
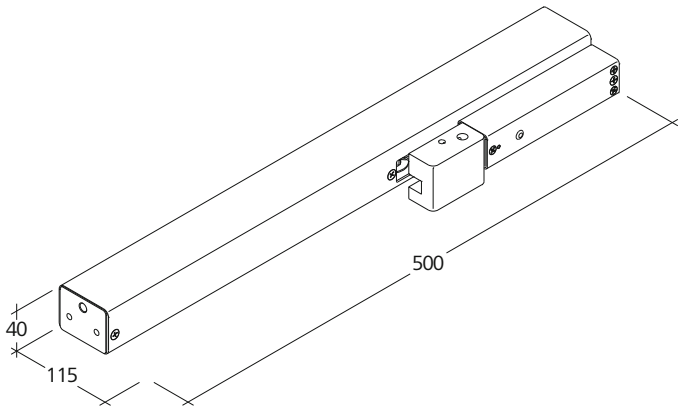
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Technical data

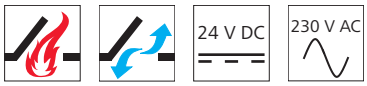
Specification per drive

	SHD 54	SHD 54-BSY+ Set
Supply	24 V DC / ±15 % / 1 A	
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)	
Force of pressure	500 N	
Tensile force	500 N	
Service life	20000 double strokes	
Stroke	450 mm	
OPEN running speed	11.8 mm/s	
OPEN running speed - SHEV	15.2 mm/s	
CLOSED running speed	11.8 mm/s	
Type of protection	IP 50	
Emission sound pressure level	LpA ≤ 70 dB(A)	
Temperature range	-5 °C ... +75 °C	
Fire resistance	B300 (30 min / 300 °C)	
Housing	Aluminium	
Surface	Powder-coated	
Colour	White aluminium (~ RAL 9006)	
Connection	2.5 m silicone cable	
W x H x D	500 x 40 x 115 mm	
Weight	2.10 kg	

Design

Type	Art. No.	Stroke	Remark
SHD 54/450-BSY+ Set	23.050.80	450 mm	
SHD	26.501.00	450 mm	Variable equipment possible

LDx-1-PLP / LDx-5



Performance features

- Max. force of pressure and tensile force of 1400 N and 1800 N
- Holding force of 5000 N for very large louvre windows
- Louvre window drive can be adapted for all common louvre manufacturers (such as EuroLam, Fieger, HAHN, NACO, Schneider + Nölke)
- Centrally supported driver position
- Developed based on DIN EN 12101-2
- Can be used for openings for smoke exhaust and for daily ventilation
- With motor electronics controlled via microprocessor
- With a sound pressure level of LpA ≤ 45 dB(A), the drive is among the quietest of its class
- Corrosion-protected drive components
- Programmable drive functions and different drive parameters (LDx-1-PLP)
- Additional passive and active anti-trap protection system for the main closing edges with reversing function

Approvals / Certificates

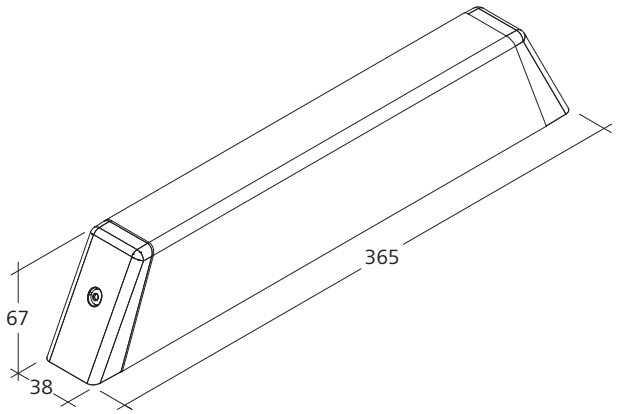
Find out about permission details from your D+H Partner.

Potential drive options

You can find the explanations for the icons on the last page.

Dimensions

All specifications in mm



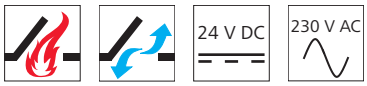
Technical data

	LDx-1400-1-PLP	LDx-1800-1-PLP	LDx-1400-5	LDx-1800-5
Supply	24 V DC / ±20 % / 1.4 A	24 V DC / ±20 % / 1.6 A	230 V AC / +10 % ... -15 % / 65 VA	230 V AC / +10 % ... -15 % / 75 VA
Force of pressure	1400 N	1800 N	1400 N	1800 N
Tensile force	1400 N	1800 N	1400 N	1800 N
Nominal locking force	5000 N			
Service life	20000 double strokes			
Stroke	36 - 90 mm			
OPEN running speed	2 mm/s			
CLOSED running speed	2 mm/s			
Type of protection	IP 40			
Emission sound pressure level	LpA ≤ 45 dB(A)			
Temperature range	-5 °C ... +75 °C			
Fire resistance	B300 (30 min / 300 °C)			
Housing	Aluminium			
Surface	Anodized			
Colour	Special colour according to RAL			
Connection	Silicone cable			
W x H x D	365 x 67 x 38 mm			

Design

Type	Art. No.	Weight	Remark
LDx-1	24.021.10	1.50 kg	Variable equipment possible
LDx-5	24.021.15	1.50 kg	Variable equipment possible

LDx-1-ACB / LDx-5-ACB



Performance features

- Max. force of pressure and tensile force of 1400 N and 1800 N
- Holding force of 5000 N for very large louvre windows
- Louvre window drive can be adapted for all common louvre manufacturers (such as EuroLam, Fieger, HAHN, NACO, Schneider + Nölke)
- Centrally supported driver position
- Developed based on DIN EN 12101-2
- Can be used for openings for smoke exhaust and for daily ventilation
- With BSY+ motor and synchronised electronics controlled via microprocessor
- With a sound pressure level of LpA ≤ 45 dB(A), the drive is among the quietest of its class
- Corrosion-protected drive components
- Programmable drive functions and different drive parameters
- Additional passive and active anti-trap protection system for the main closing edges with reversing function
- Integrated ACB (Advanced Communication Bus) bus interface with Modbus RTU protocol
- The drive is integrated directly via open bus communication through the ACB (Advanced Communication Bus), e.g. in a building management system

Approvals / Certificates

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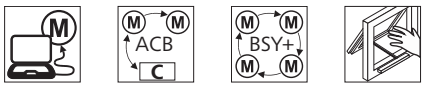
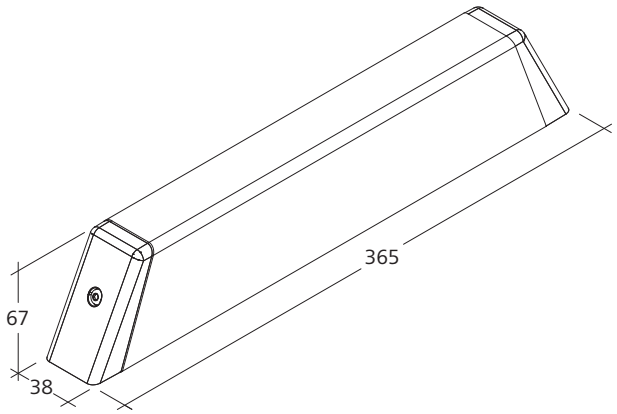
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



Technical data

	LDx-1400-1-ACB	LDx-1800-1-ACB	LDx-1400-5-ACB	LDx-1800-5-ACB
Supply	24 V DC / ±20 % / 1.4 A	24 V DC / ±20 % / 1.6 A	230 V AC / +10 % ... -15 % / 65 VA	230 V AC / +10 % ... -15 % / 75 VA
Force of pressure	1400 N	1800 N	1400 N	1800 N
Tensile force	1400 N	1800 N	1400 N	1800 N
Nominal locking force	5000 N			
Service life	20000 double strokes			
Stroke	36 - 90 mm			
OPEN running speed	2 mm/s			
CLOSED running speed	2 mm/s			
Type of protection	IP 40			
Emission sound pressure level	LpA ≤ 45 dB(A)			
Temperature range	-5 °C ... +75 °C			
Fire resistance	B300 (30 min / 300 °C)			
Housing	Aluminium			
Surface	Anodized			
Colour	Special colour according to RAL			
Connection	Silicone cable			
W x H x D	365 x 67 x 38 mm			

Design

Type	Art. No.	Weight	Remark
LDx-1	24.021.10	1.50 kg	Variable equipment possible
LDx-5	24.021.15	1.50 kg	Variable equipment possible

LDx

Performance features

- Can be used for openings for smoke exhaust; D+H Euro SHEV in accordance with EN 12101-2; and for daily ventilation
- With motor electronics controlled via microprocessor
- High pressure and tensile force with very compact dimensions
- Force and position control for synchronous run of two drives
- Corrosion-protected drive components
- Programmable drive functions and different drive parameters
- Additional passive and active anti-trap protection system for the main closing edges with reversing function
- Louvre window drive can be adapted for all common louvre manufacturers (such as EuroLam, Fieger, HAHN, NACO, Schneider + Nölke)

Approvals / Certificates

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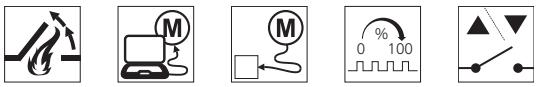
Article also available with the following permissions under other article numbers. Technical data may deviate.

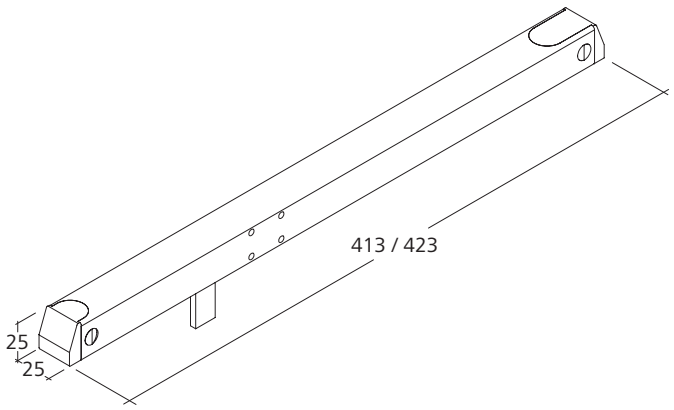
Potential drive options

You can find the explanations for the icons on the last page.



Dimensions

All specifications in mm



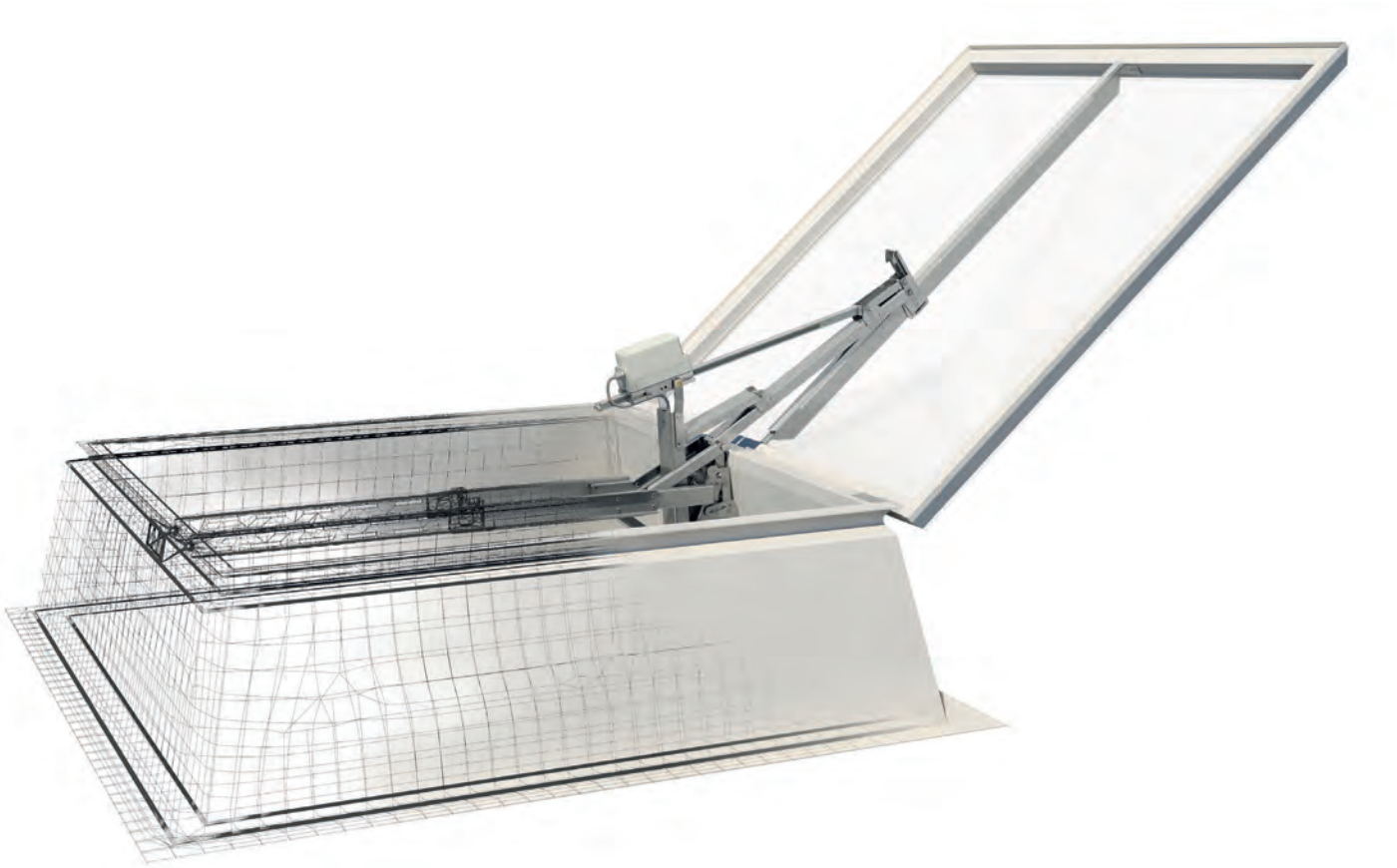
Technical data

	LDx
Supply	24 V DC / ±15 % / 0.8 A
Duty cycle	30 % (ON: 3 min. / OFF: 7 min.)
Nominal force (max.)	900 N
Service life	20000 double strokes
Stroke	28,5 - 80 mm
OPEN running speed (max.)	2.1 mm/s
CLOSED running speed (max.)	2.1 mm/s
Type of protection	IP 50
Emission sound pressure level	LpA ≤ 70 dB(A)
Temperature range	-5 °C ... +75 °C
Fire resistance	B300 (30 min / 300 °C)
Housing	V2A stainless steel
Connection	Silicone cable
W x H x D (max.)	423 x 25 x 25 mm
Weight	1.20 kg

Design

Type	Art. No.	Remark
LDx	24.020.10	Variable equipment possible

Skylight systems



SDS Series Skylight system

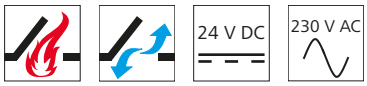
Type	Supply	Max. OPENING force incl. snow load	Page
SDS 3-0800-1	24 V DC	1980 N	158
SDS 3-1000-1	24 V DC	2200 N	158
SDS 3-0800-5	230 V AC	1980 N	158
SDS 3-1000-5	230 V AC	2200 N	158

SDS Series Skylight system

Type	Supply	Max. force of pressure	Page
SDS 2-DU-24V	24 V DC	3000 N	160
SDS 2-DU-24V-Set	24 V DC	3000 N	160
SDS 2-DU-230V	230 V AC	3000 N	160
SDS 2-DU-230V-Set	230 V AC	3000 N	160

The specifications for the sets are per drive.

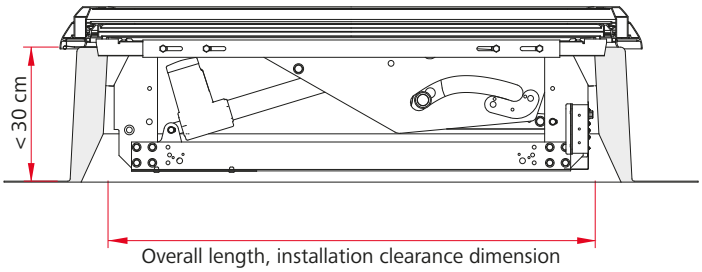
SDS 3



Performance features

- For opening and closing skylights for ventilation and smoke extraction applications up to an opening angle of 170°
- Outstandingly quiet drive for convenient daily ventilation
- Up to 3000 N of max. system load (skylight incl. snow load) thanks to optional power pack
- Maximum coupling weight of 90 kg (max. opening angle of 120°)
- Electronic system for SA and SZ signalling that can have modules added to it, BSY+ (synchronous operation of 2 systems) and interface to the ACB Gateway
- Maximum opening angle can be adjusted using D+H SCS software
- Basic systems available at lengths of 0.8 m and 1 m, installable in skylights with an installation clearance dimension of 0.8 m or more
- System that can be expanded using modules with customer-specific installation sets and dimensions (up to 1.5 m; 1.5 m - 2 m)
- Easy installation thanks to pre-installation of the brackets and convenient mounting from above
- Mechanical locking mechanism for increased wind loads and burglary protection incl. emergency unlocking (optional)

Dimensions



Technical data

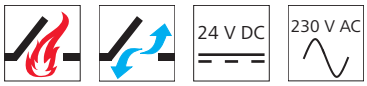
	SDS 3-0800-1	SDS 3-1000-1	SDS 3-0800-5	SDS 3-1000-5
Supply	24 V DC / ±15 % / 5 A		230 V AC / +10 % ... -15 % / 140 VA	
Max. OPENING force incl. snow load	1980 N	2200 N	1980 N	2200 N
Max. CLOSING force (from 170°)	450 N	500 N	450 N	500 N
Nominal locking force on the lift arm	3000 N *	3400 N *	3000 N *	3400 N *
Service life	11000 double strokes			
OPEN running speed	170° / 60 s			
CLOSED running speed	170° / 60 s			
Wind load class	1500 Pa ** ***			
Snow load class	750 Pa ** ***			
Type of protection	IP 54			
Temperature range	-5 °C ... +75 °C			
Fire resistance	B300 (30 min / 300 °C)			
Connection	Electronic box, screw terminals			

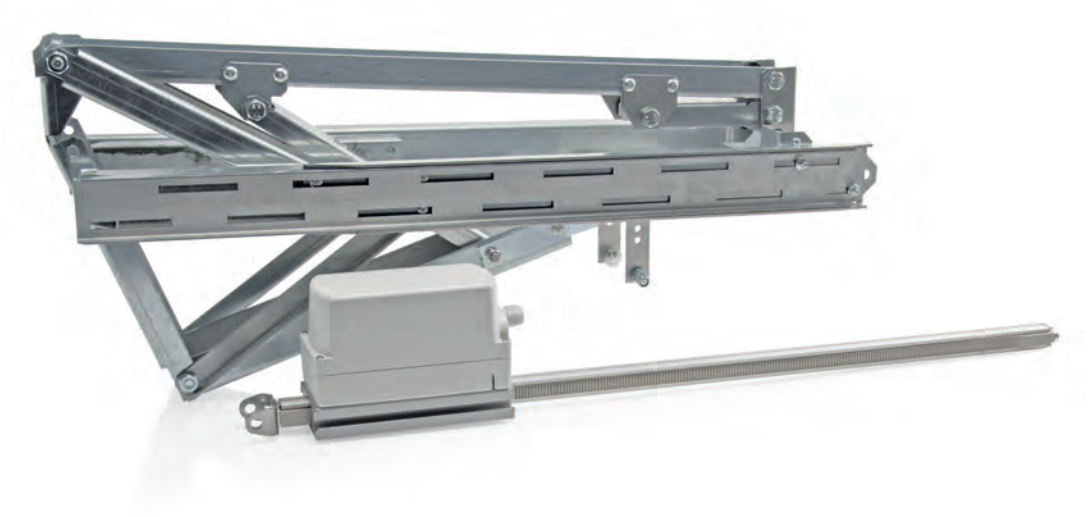
* Force at the outer edge of the skylight depends on the skylight dimensions
** developed in accordance with EN 12101-2
*** Values for skylight size of 2.25 m² (1.5 m x 1.5 m) at a skylight weight of 50 kg.
The value changes in proportion to changes in the skylight size and weight.
The skylights must be suitable for the loads.

Design

Type	Art. No.	Weight
SDS 3-0800-1	27.903.01	18.00 kg
SDS 3-1000-1	27.903.02	18.00 kg
SDS 3-0800-5	27.903.03	18.50 kg
SDS 3-1000-5	27.903.04	18.50 kg

SDS 2





Performance features

- For opening and closing skylights for ventilation and smoke extraction applications
- System consisting of drive unit and skylight-specific installation set
- With BSY+ motor and synchronised electronics controlled via microprocessor
- Service life inspected with at least 20000 opening cycles for ventilation and an additional 1000 opening cycles for smoke extraction in accordance with EN 12101-2
- Optimal aerodynamic values by quick opening to 172°
- Power transmission structurally optimised, therefore minimum strain on ventilator frame and hinges
- High type of protection for drive unit; can therefore also be used under difficult ambient conditions
- Quick installation and easy handling thanks to modules pre-installed at the factory
- Installation sets available for many skylights

Approvals / Certificates

Find out about permission details from your D+H Partner.

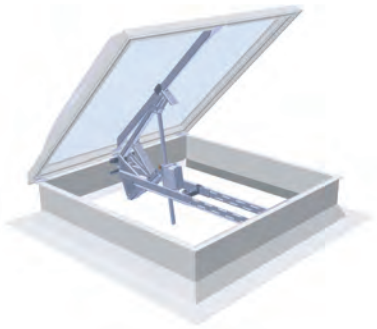
ZERTIFIZIERT EN 12101-2 CE CERTIFIED D+H EURO RWA D+H EURO SMEV

Example of application

Drive unit

Installation set

Skylight Drive System



Technical data

Specification per drive unit

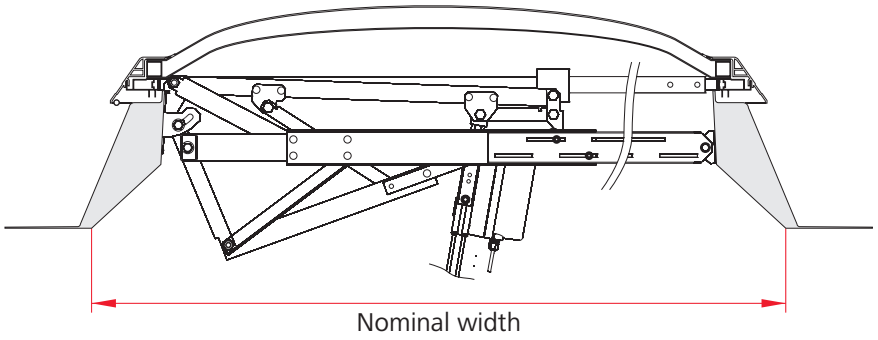
	SDS 2-DU-24V	SDS 2-DU-230V
Supply	24 V DC / ±15 % / 4 A	230 V AC / +10 % ... -15 % / 145 VA
Force of pressure	3000 N	
Tensile force	3000 N	
Nominal locking force	2200 N	
Service life	20000 double strokes	
OPEN running speed	7.1 mm/s	
CLOSED running speed	7.1 mm/s	
Wind load class	1500 Pa ** ***	
Snow load class	500 Pa ** ***	
Type of protection	IP 64	
Temperature range	-5 °C ... +75 °C	
Fire resistance	B300 (30 min / 300 °C)	
Connection	2.5 m silicone cable	

** In accordance with EN 12101-2 (inspected with various manufacturers)
*** Values for dome size 2.25 m². Change proportional for deviating dome sizes with compatible domes.

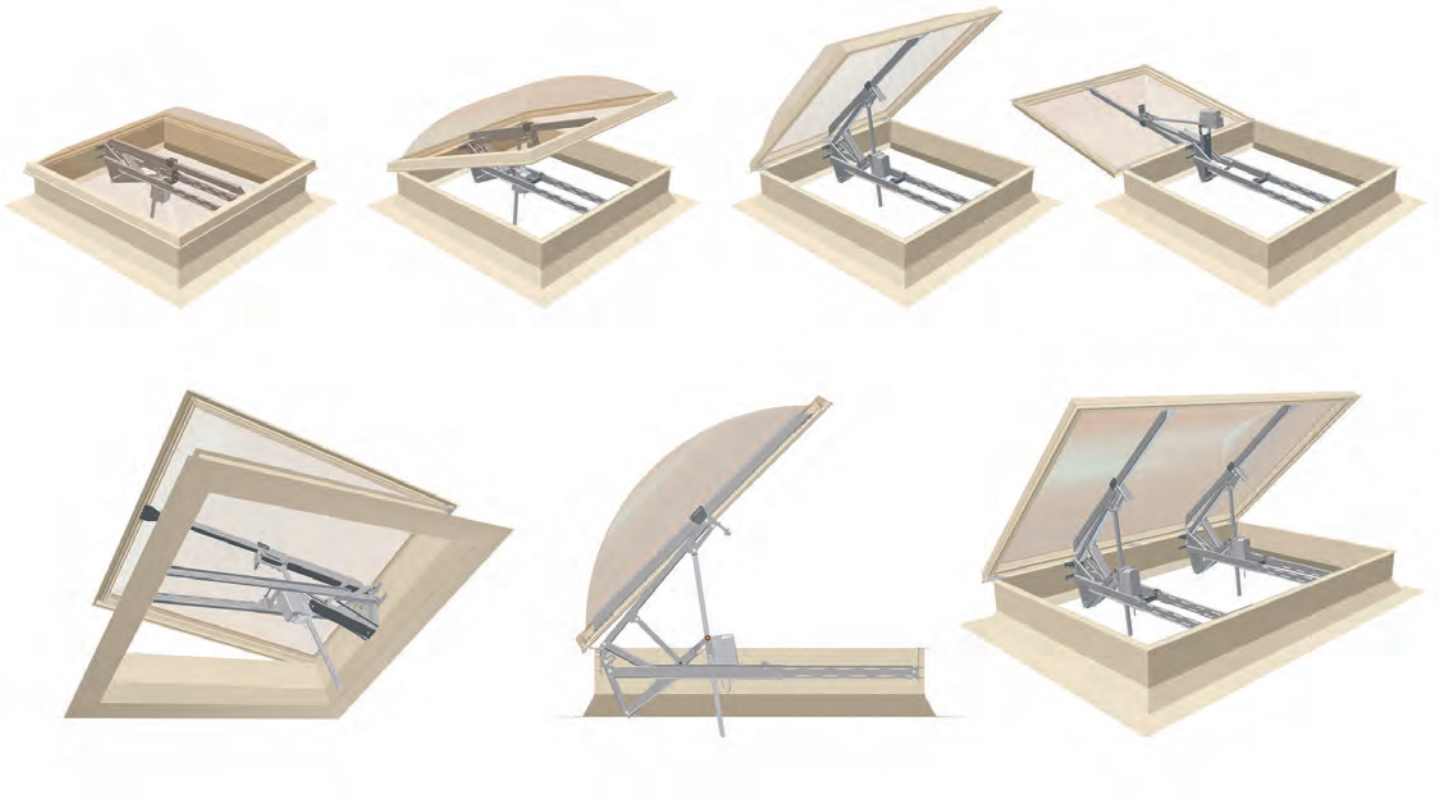
Design

Type	Art. No.	Weight	Remark
SDS 2-DU-24V	27.900.01	18.00 kg	
SDS 2-DU-24V-Set	27.900.03	36.00 kg	2 installation sets required
SDS 2-DU-230V	27.900.02	18.00 kg	
SDS 2-DU-230V-Set	27.900.04	36.00 kg	2 installation sets required

Dimensions



Example of application



Installation sets

Eberspächer®

Type	Art. No.	Nominal width
SDS-BS001	27.901.01	100 cm
SDS-BS002	27.901.02	120 cm
SDS-BS003	27.901.03	125 cm
SDS-BS004	27.901.04	140 cm
SDS-BS005	27.901.05	150 cm

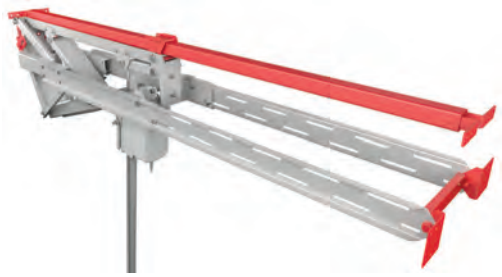
SHEV-certified by skylight manufacturer

Adapter plates and installation material are shown in red

Heller®

Type	Art. No.	Nominal width
SDS-BS014	27.901.14	100 cm
SDS-BS015	27.901.15	120 cm
SDS-BS016	27.901.16	150 cm

SHEV-certified by skylight manufacturer



Adapter plates and installation material are shown in red

Lamilux® K

Type	Art. No.	Nominal width
SDS-BS025	27.901.25	120 cm
SDS-BS026	27.901.26	125 cm
SDS-BS027	27.901.27	150 cm

SHEV-certified by skylight manufacturer

Adapter plates and installation material are shown in red

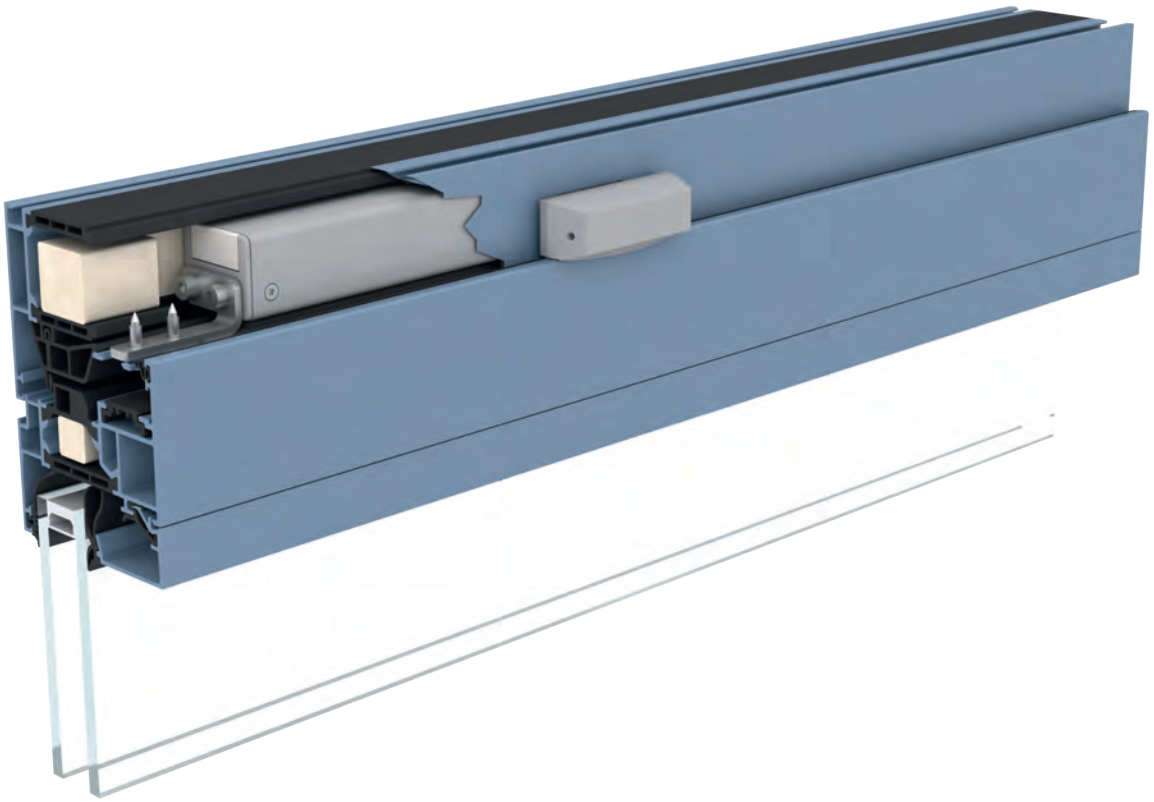
Lamilux® SK

Type	Art. No.	Nominal width
SDS-BS028	27.901.28	100 cm
SDS-BS029	27.901.29	120 cm
SDS-BS030	27.901.30	125 cm
SDS-BS031	27.901.31	150 cm

SHEV-certified by skylight manufacturer

Adapter plates and installation material are shown in red

Bracket sets



D+H installation solutions

The installation solutions from D+H mean that the variety of profile systems are no obstacle for you. Thanks to the special adjustment of installation solutions, you will always find the right solution for your window. D+H drives are installed either mounted or integrated into the profile. The preferred installation locations are on the window or sash frame of the main or side closing edges. You can install D+H drives on inward or outward opening side-hung, bottom-hung, top-hung or parallel opening windows. The opening angle of the window depends on the drive stroke, the bracket height and the distance to the hinge.
You can use the installation solutions from D+H for SHEV systems and for natural ventilation in the roof and façade.
Easy installation is a given! Simply use the installation-ready documentation consisting of the instructions for use and CAD drawings. To ensure that nothing is missing at the construction site, the fastening materials are already included in the bracket sets.

Perfect integration

You'll want to take a closer look at this: The bracket solution for the profile-integrated installation is so compact that it can nearly make itself invisible in the installation. This is because the covered installation in the window profile makes the high-performance drive elegantly disappear from view. Once this multi-talented solution is installed in the window, you will notice its function as it quickly and quietly ensures controlled natural ventilation and smoke vent in accordance with EN 12101-2.
Thanks to its minimum dimensions, the CDC provides perfect integration and is ideally suited for aesthetically and functionally sophisticated façade solutions. Your view will not be disrupted by any fastening materials visible on the outside - for noticeable comfort that remains invisible. And something that will make everyone happy: A test at ift Rosenheim confirms that the change of the heat-transmission coefficient of the windows with integrated installation in the aluminium profile is hardly perceptible.

The installation solutions from D+H provide comfort and flexibility and are excellently suited for numerous window and façade solutions, for wood, aluminium and also state-of-the-art plastic profiles.

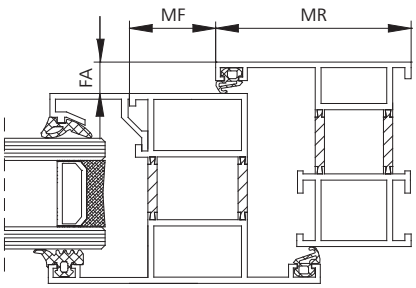
Installation - How much space does a D+H drive need?

When selecting the window, you have to make sure there is enough space for installing the D+H drives. The space requirements vary depending on the required position. The following figures provide an overview of the relevant dimensions.

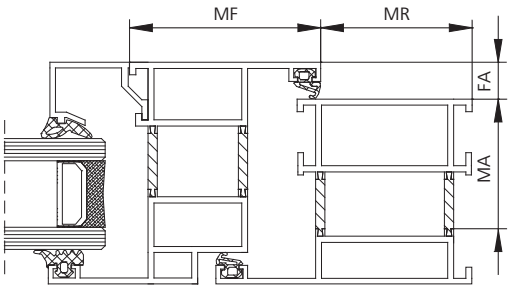
MF = installation space on the sash
MR = installation space on the frame
MA = installation depth of an integrated drive
FA = sash step height

Bracket sets without specification of dimensions were developed specially for the indicated series.

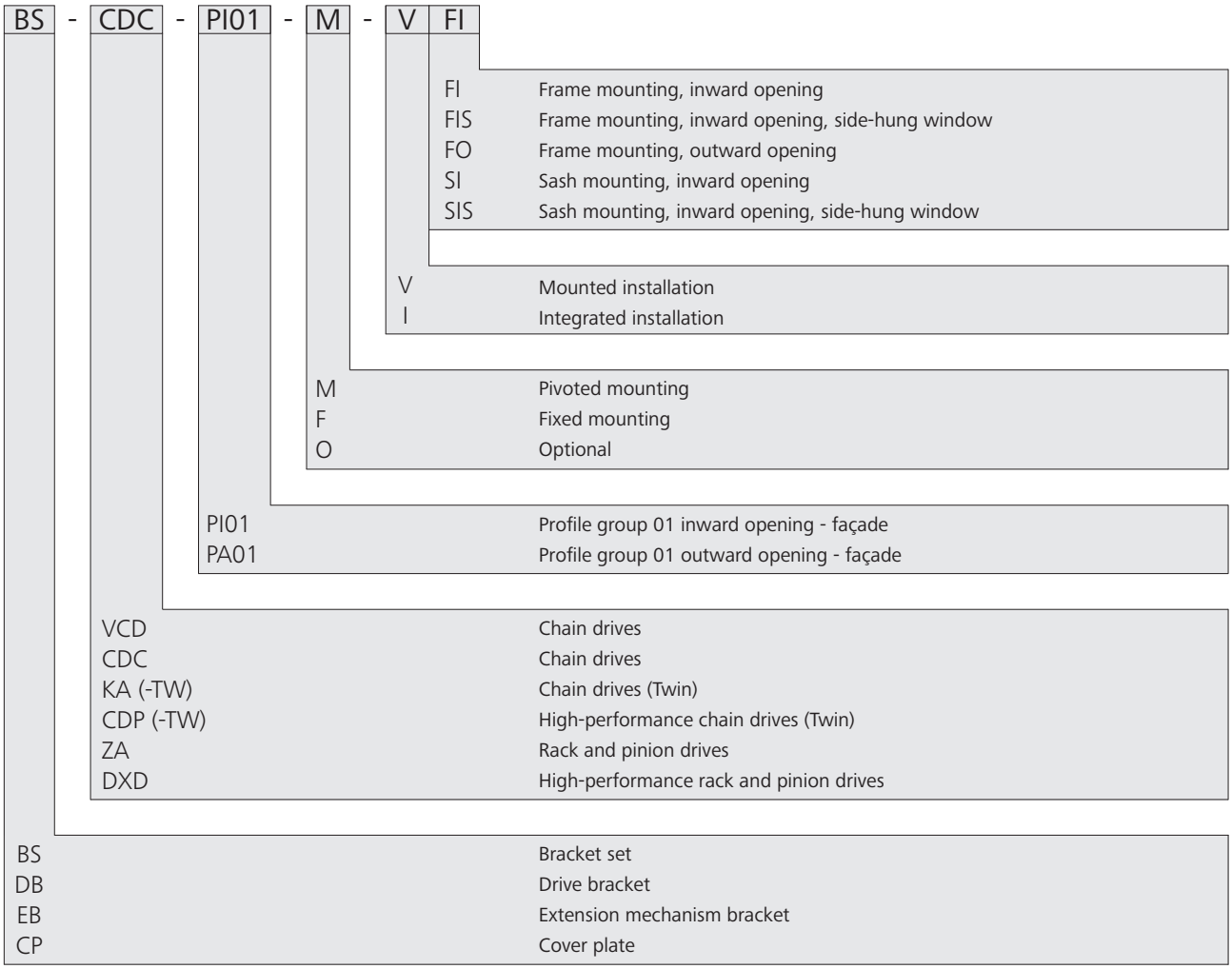
Outward opening - mounted



Inward opening - mounted



Marking system - Identification of the new brackets



Marking system - Identification of the old brackets

CDC	-	BS076	-	V	FI

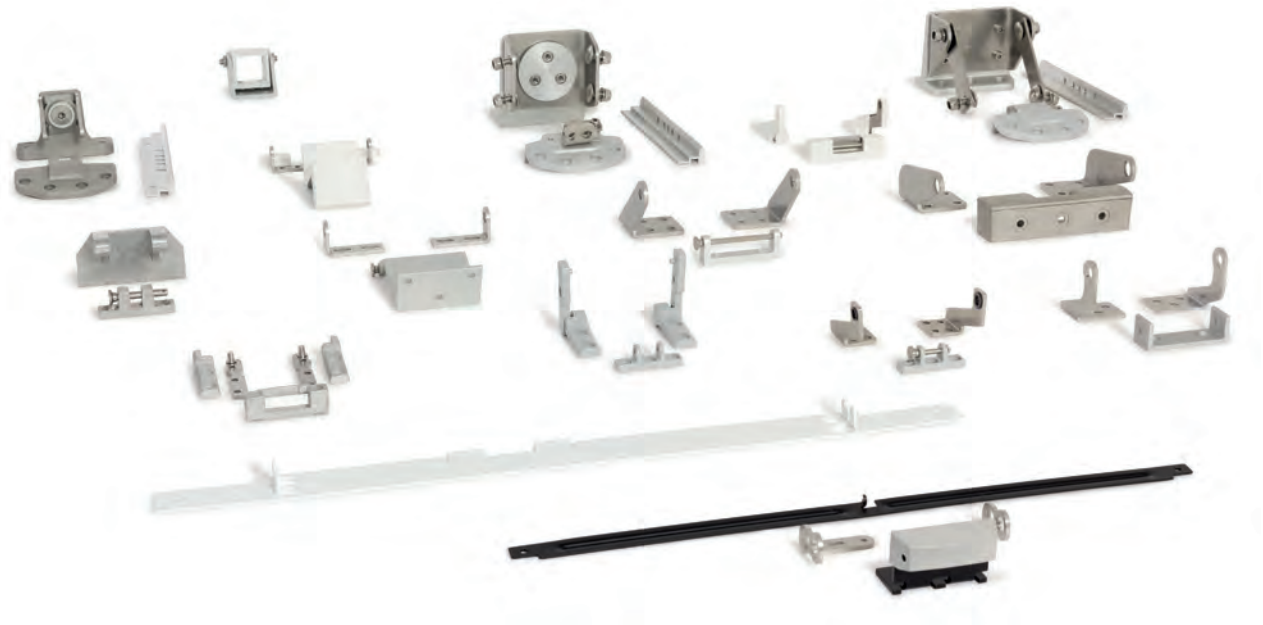
FI	Frame mounting, inward opening
FIS	Frame mounting, inward opening, side-hung window
FO	Frame mounting, outward opening
SI	Sash mounting, inward opening
SIS	Sash mounting, inward opening, side-hung window

V	Mounted installation
I	Integrated installation

BS076	Bracket set with sequential numbering for each product line

VCD	Chain drives
CDC	Chain drives
KA (-TW)	Chain drives (Twin)
CDP (-TW)	High-performance chain drives (Twin)
ZA	Rack and pinion drives
DXD	High-performance rack and pinion drives

Brackets



VCD Series

CDC Series

KA Series

KA-TW Series

CDP Series

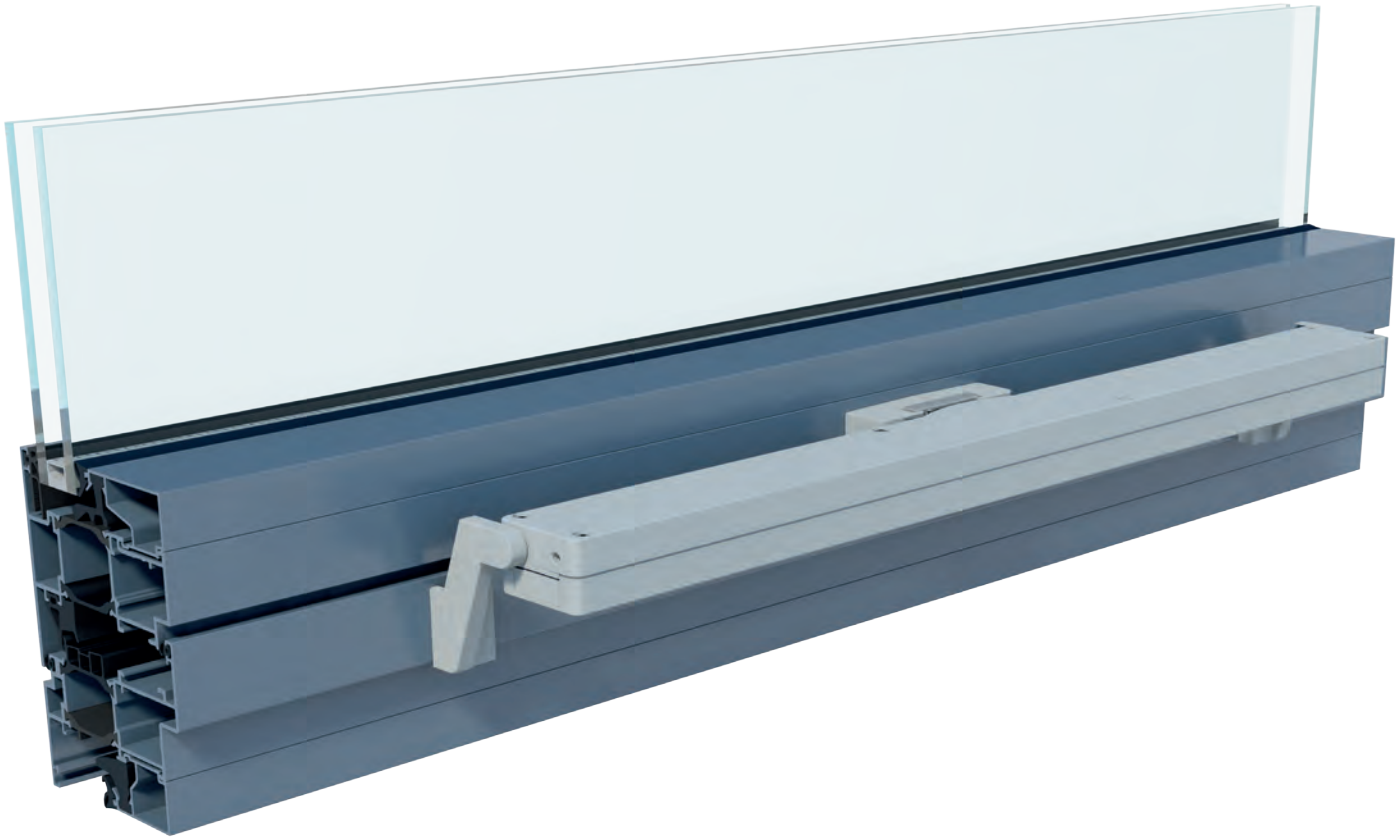
CDP-TW Series

ZA Series

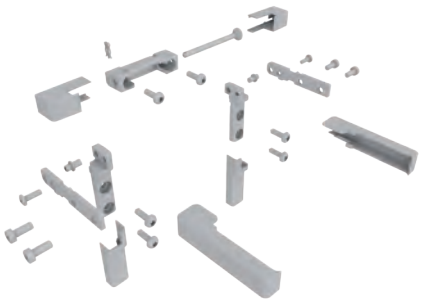
DXD Series

WDF Series

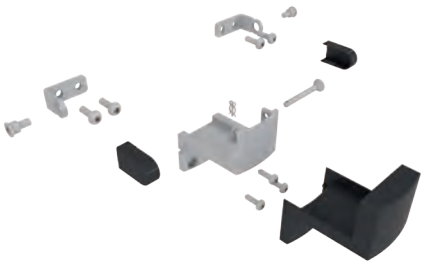
Bracket sets for VCD



VCD-BS007-VFO (BK)



VCD-BS001-VSI (SR)

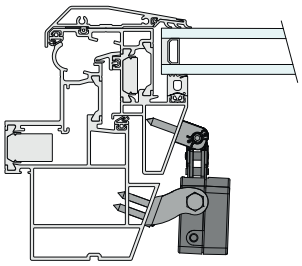


VCD-BS004-VFI (BK)

Performance features

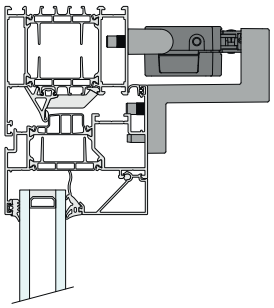
- Optimal adaptation of bracket sets to the respective profile system
- All materials required fastening materials are included in the scope of supply of the bracket sets
- Special colour as an option at the customer's request
- Application drawings suitable for window and façade manufacturers available

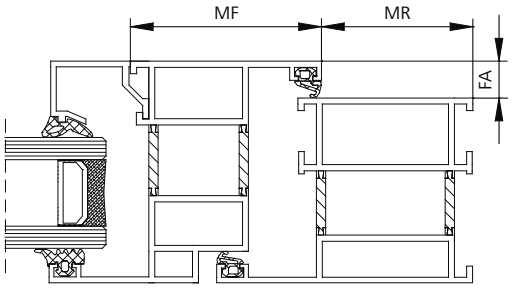
Roof window, outward opening



Profile manufacturer	Profile series	Art. No.	Bracket set
Reynaers®	CR 120	25.BAE.KS	VCD-BS014-VFO
Schüco®	AWS 57 RO	25.BAK.KS	VCD-BS010-VFO
Schüco®	Royal S 106D	25.BAF.KS	VCD-BS015-VFO
Schüco®	Royal S 47D	25.BAG.KS	VCD-BS016-VFO
Schüco®	Royal S 88D	25.BAK.KS	VCD-BS010-VFO

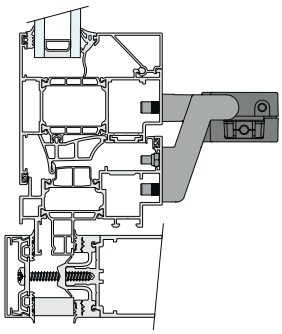
Façade windows, inward opening

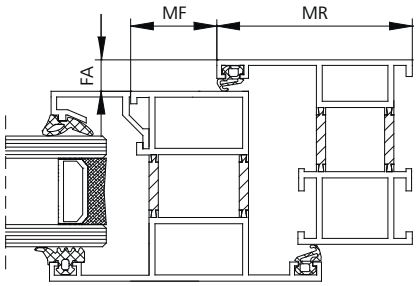




Profile manufacturer	Profile series	Art. No.	Bracket set	MF	MR	FA
Raico®	FRAME+ 75	25.CAL.KS	VCD-BS017-VSI (SR)	43 mm	21 mm	0 - 15 mm
Raico®	FRAME+ 75	25.CAK.KS	VCD-BS017-VSI (BK)	43 mm	21 mm	0 - 15 mm
Raico®	FRAME+ 75	25.CAM.KS	VCD-BS017-VSI (WH)	43 mm	21 mm	0 - 15 mm
Raico®	FRAME+ 75	25.CAP.KS	VCD-BS018-VFI (SR)	42 mm	40 mm	0 - 15 mm
Raico®	FRAME+ 75	25.CAN.KS	VCD-BS018-VFI (BK)	42 mm	40 mm	0 - 15 mm
Raico®	FRAME+ 75	25.CAR.KS	VCD-BS018-VFI (WH)	42 mm	40 mm	0 - 15 mm
Raico®	FRAME+ 90 WI	25.CAL.KS	VCD-BS017-VSI (SR)	43 mm	21 mm	0 - 15 mm
Raico®	FRAME+ 90 WI	25.CAK.KS	VCD-BS017-VSI (BK)	43 mm	21 mm	0 - 15 mm
Raico®	FRAME+ 90 WI	25.CAM.KS	VCD-BS017-VSI (WH)	43 mm	21 mm	0 - 15 mm
Raico®	FRAME+ 90 WI	25.CAP.KS	VCD-BS018-VFI (SR)	42 mm	40 mm	0 - 15 mm
Raico®	FRAME+ 90 WI	25.CAN.KS	VCD-BS018-VFI (BK)	42 mm	40 mm	0 - 15 mm
Raico®	FRAME+ 90 WI	25.CAR.KS	VCD-BS018-VFI (WH)	42 mm	40 mm	0 - 15 mm

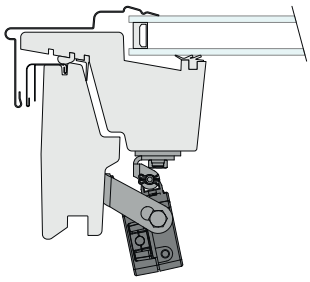
Façade windows, outward opening





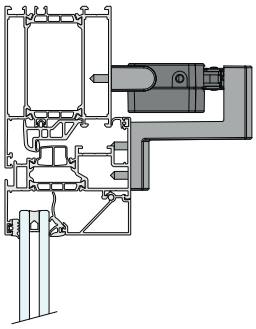
Profile manufacturer	Profile series	Art. No.	Bracket set	MF	MR	FA
Raico®	FRAME+ 75 WA	25.CAT.KS	VCD-BS019-VFO (SR)	25 mm	42 mm	0 - 15 mm
Raico®	FRAME+ 75 WA	25.CAS.KS	VCD-BS019-VFO (BK)	25 mm	42 mm	0 - 15 mm
Raico®	FRAME+ 75 WA	25.CAU.KS	VCD-BS019-VFO (WH)	25 mm	42 mm	0 - 15 mm

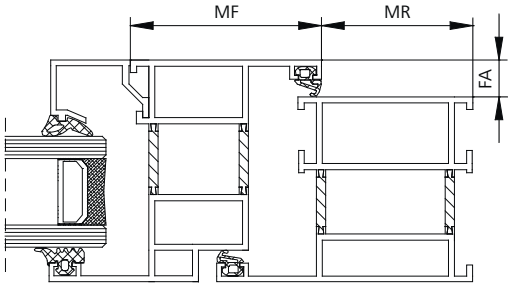
Roof windows



Profile manufacturer	Profile series	Art. No.	Bracket set
ROTO®	R6	25.BAB.KS	VCD-BS011-VFO (SR)
ROTO®	R6	25.BAC.KS	VCD-BS011-VFO (BK)
ROTO®	R6	25.BAA.KS	VCD-BS011-VFO (WH)
ROTO®	R8	25.BAB.KS	VCD-BS011-VFO (SR)
ROTO®	R8	25.BAC.KS	VCD-BS011-VFO (BK)
ROTO®	R8	25.BAA.KS	VCD-BS011-VFO (WH)
VELUX®	GGL	25.BAB.KS	VCD-BS011-VFO (SR)
VELUX®	GGL	25.BAC.KS	VCD-BS011-VFO (BK)
VELUX®	GGL	25.BAA.KS	VCD-BS011-VFO (WH)
VELUX®	GGU	25.BAB.KS	VCD-BS011-VFO (SR)
VELUX®	GGU	25.BAC.KS	VCD-BS011-VFO (BK)
VELUX®	GGU	25.BAA.KS	VCD-BS011-VFO (WH)
VELUX®	GHL	25.BAB.KS	VCD-BS011-VFO (SR)
VELUX®	GHL	25.BAC.KS	VCD-BS011-VFO (BK)
VELUX®	GHL	25.BAA.KS	VCD-BS011-VFO (WH)
VELUX®	GHU	25.BAB.KS	VCD-BS011-VFO (SR)
VELUX®	GHU	25.BAC.KS	VCD-BS011-VFO (BK)
VELUX®	GHU	25.BAA.KS	VCD-BS011-VFO (WH)
VELUX®	GPL	25.BAB.KS	VCD-BS011-VFO (SR)
VELUX®	GPL	25.BAC.KS	VCD-BS011-VFO (BK)
VELUX®	GPL	25.BAA.KS	VCD-BS011-VFO (WH)
VELUX®	GPU	25.BAB.KS	VCD-BS011-VFO (SR)
VELUX®	GPU	25.BAC.KS	VCD-BS011-VFO (BK)
VELUX®	GPU	25.BAA.KS	VCD-BS011-VFO (WH)

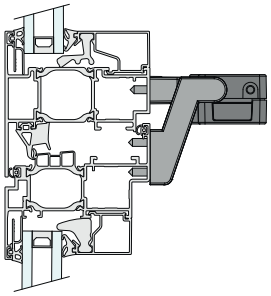
Universal bracket sets, inward opening

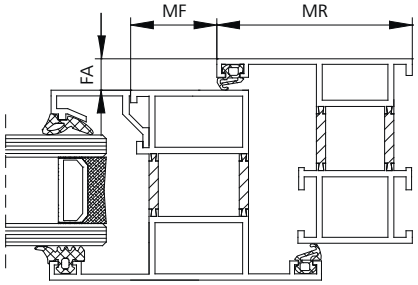




Application	Art. No.	Bracket set	MF	MR	FA
Façade window, inward opening	25.CAB.KS	VCD-BS001-VSI (SR)	43 mm	21 mm	0 - 15 mm
Façade window, inward opening	25.CAA.KS	VCD-BS001-VSI (BK)	43 mm	21 mm	0 - 15 mm
Façade window, inward opening	25.CAC.KS	VCD-BS001-VSI (WH)	43 mm	21 mm	0 - 15 mm
Façade window, inward opening	25.CAE.KS	VCD-BS004-VFI (SR)	42 mm	40 mm	0 - 15 mm
Façade window, inward opening	25.CAD.KS	VCD-BS004-VFI (BK)	42 mm	40 mm	0 - 15 mm
Façade window, inward opening	25.CAF.KS	VCD-BS004-VFI (WH)	42 mm	40 mm	0 - 15 mm

Universal bracket sets, outward opening



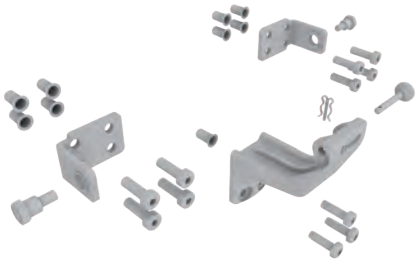


Application	Art. No.	Bracket set	MF	MR	FA
Façade window, outward opening	25.CAH.KS	VCD-BS007-VFO (SR)	25 mm	42 mm	0 - 15 mm
Façade window, outward opening	25.CAG.KS	VCD-BS007-VFO (BK)	25 mm	42 mm	0 - 15 mm
Façade window, outward opening	25.CAJ.KS	VCD-BS007-VFO (WH)	25 mm	42 mm	0 - 15 mm
Façade window, outward opening	25.BAD.KS	VCD-BS008-VFO	25 mm	42 mm	0 - 15 mm

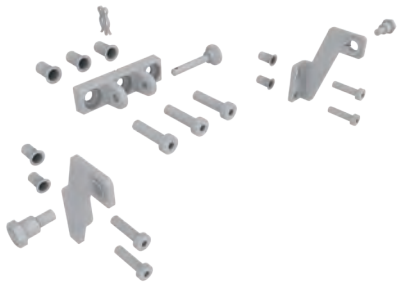
Drilling template

Type	Art. No.	Bracket set	Colour
DTP 4	68.700.47	VCD-BS004-VFI	Red
DTP 5	68.700.48	VCD-BS001-VSI	Grey
DTP 6	68.700.49	VCD-BS007-VFO	White

Bracket sets for CDC



CDC-BS089-VFI



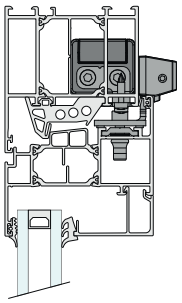
BS-CDC-PA01-M-VFO

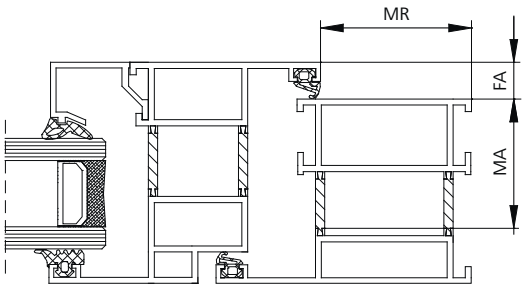
BS-CDC-PI01-M-VFI

Performance features

- Optimal adaptation of bracket sets to the respective profile system
- Solutions tested as complete systems for SHEV applications in accordance with EN 12101-2
- All materials required fastening materials are included in the scope of supply of the bracket sets
- Special colour as an option at the customer's request
- Application drawings suitable for window and façade manufacturers available

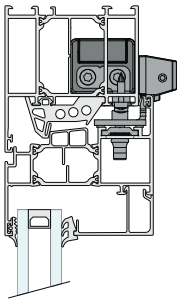
Bottom-hung and side-hung windows, inward opening, integrated, stroke 350 mm

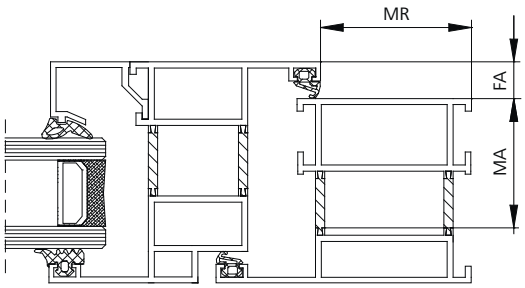




Profile manufacturer	Profile series	Art. No.	Bracket set	MR	MA	FA
Wooden window frame profiles		25.AAA.KS	CDC-BS001-IFI	35 mm	52 mm	5 - 20 mm
Wooden window frame profiles		25.ABF.KS	CDC-BS010-IFI	35 mm	52 mm	5 - 20 mm
Wooden window frame profiles		25.AHM.KS	CDC-BS094-IFI (WH)	22 mm	44 mm	33 mm
Schüco®	AWS xx	25.ADN.KS	CDC-BS034-IFI	49 mm	38 mm	10 mm
Schüco®	Corona SI	25.AHL.KS	CDC-BS092-IFI (WH)	22 mm	44 mm	33 mm
Schüco®	Royal S xx.HI	25.ADN.KS	CDC-BS034-IFI	49 mm	38 mm	11 mm
Wicona®	WICLINE 65	25.AHD.KS	CDC-BS082-IFIS	45 mm	38 mm	10 mm
Wicona®	WICLINE 75 EVO	25.AHD.KS	CDC-BS082-IFIS	45 mm	38 mm	10 mm

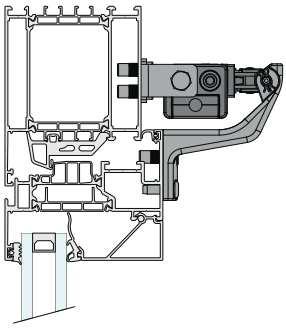
Bottom-hung and side-hung windows, inward opening, integrated, stroke 600 mm

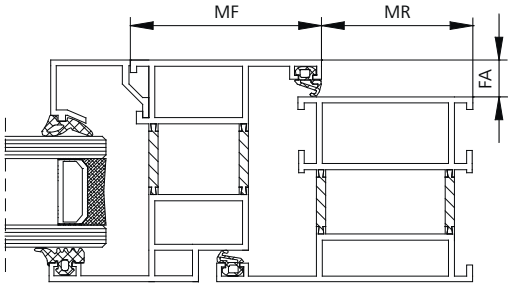




Profile manufacturer	Profile series	Art. No.	Bracket set	MR	MA	FA
Wooden window frame profiles		25.AAA.KS	CDC-BS001-IFI	35 mm	52 mm	5 - 20 mm
Wooden window frame profiles		25.ABF.KS	CDC-BS010-IFI	35 mm	52 mm	5 - 20 mm
Wooden window frame profiles		25.AHM.KS	CDC-BS094-IFI (WH)	22 mm	44 mm	33 mm
Schüco®	AWS xx	25.ADP.KS	CDC-BS035-IFI	49 mm	38 mm	10 mm
Schüco®	Corona SI	25.AHV.KS	CDC-BS093-IFI (WH)	22 mm	44 mm	33 mm
Schüco®	Royal S xx.HI	25.ADP.KS	CDC-BS035-IFI	49 mm	38 mm	10 mm
Wicona®	WICLINE 65	25.AHE.KS	CDC-BS083-IFIS	45 mm	38 mm	10 mm
Wicona®	WICLINE 75 EVO	25.AHE.KS	CDC-BS083-IFIS	45 mm	38 mm	10 mm

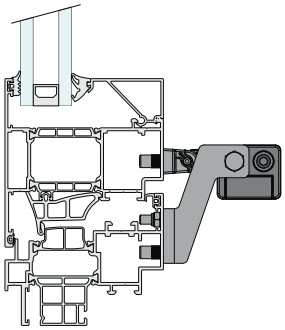
Bottom-hung and side-hung window, inward opening

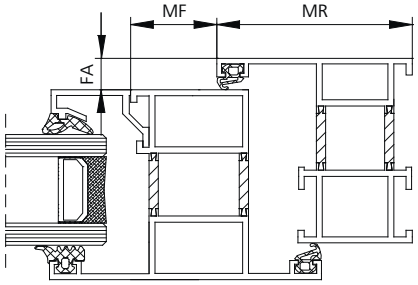




Profile manufacturer	Profile series	Art. No.	Bracket set	MF	MR	FA
Raico®	FRAME+ 75	25.AHG.KS	CDC-BS089-VFI	39 mm	40 mm	0 - 15 mm
Raico®	FRAME+ 75 WI	25.AHJ.KS	CDC-BS091-VSI	41 mm	25 mm	0 - 15 mm
Raico®	FRAME+ 90 WI	25.AHG.KS	CDC-BS089-VFI	39 mm	40 mm	0 - 15 mm

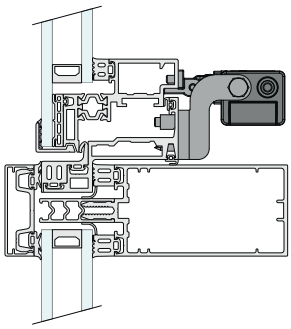
Bottom-hung and side-hung window, outward opening





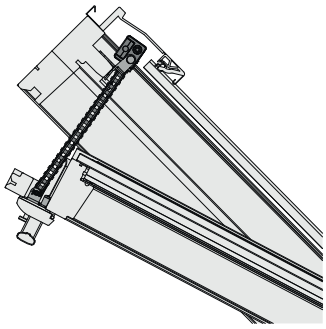
Profile manufacturer	Profile series	Art. No.	Bracket set	MF	MR	FA
Raico®	FRAME+ 75 WA	25.AHH.KS	CDC-BS090-VFO	21 mm	45 mm	0 - 15 mm

Projected top-hung, parallel opening window, outward opening



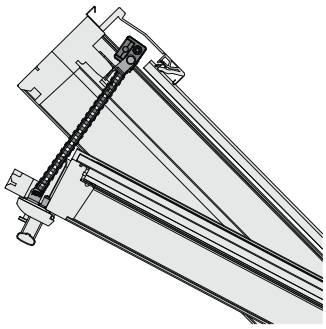
Profile manufacturer	Profile series	Art. No.	Bracket set
Gutmann®	S70 SK	25.ACE.KS	CDC-BS021-VFO
Raico®	FRAME+ 75 WA	25.AHH.KS	CDC-BS090-VFO
Raico®	WING 50 SK-R	25.ACE.KS	CDC-BS021-VFO
Reynaers®	CW 50	25.ADW.KS	CDC-BS038-VFO
Sapa®	SFB 1074	25.AFZ.KS	CDC-BS069-VFO
Sapa®	SFB 1074 + additional profile	25.AGC.KS	CDC-BS070-VFO
Schüco®	AWS 102	25.ABE.KS	CDC-BS009-VFO
Skandinaviska®	SG 2000	25.AGA.KS	CDC-BS064-VFO

Roof windows, stroke 350 mm



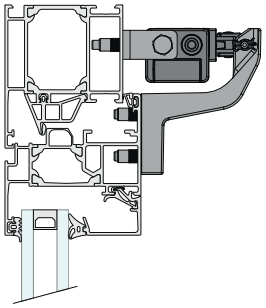
Profile manufacturer	Profile series	Art. No.	Bracket set
VELUX®	GGL	25.ACG.KS	CDC-BS022
VELUX®	GGU	25.ACG.KS	CDC-BS022

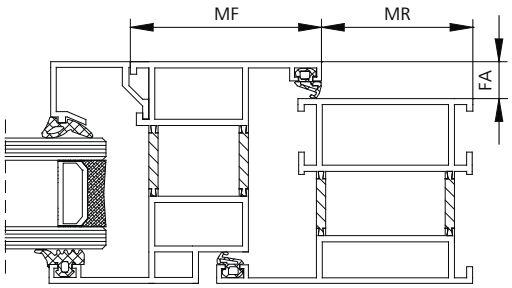
Roof windows, stroke 600 mm



Profile manufacturer	Profile series	Art. No.	Bracket set
VELUX®	GGL	25.ACH.KS	CDC-BS023
VELUX®	GGU	25.ACH.KS	CDC-BS023

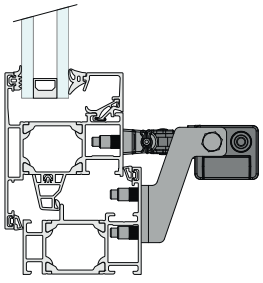
Universal bracket sets, inward opening

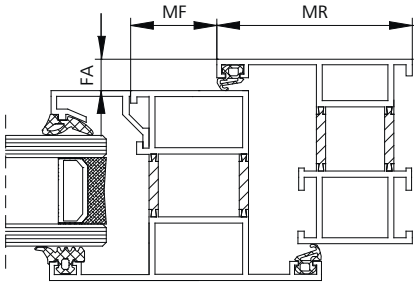




Application	Art. No.	Bracket set	MF	MR	FA
Window frame mounting, inward opening	26.800.01	BS-CDC-PI01-M-VFI	39 mm	40 mm	5 - 20 mm
Sash mounting, inward opening	26.800.02	BS-CDC-PI01-O-VSI	42 mm	25 mm	8 - 11 mm

Universal bracket sets, outward opening



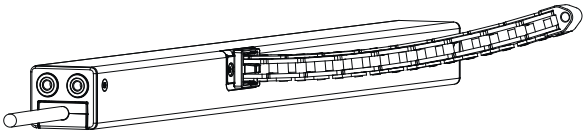


Application	Art. No.	Bracket set	MF	MR	FA
Window frame mounting, outward opening	26.800.03	BS-CDC-PA01-M-VFO	21 mm	42 mm	0 - 20 mm
Window frame mounting, outward opening	25.AGN.KS	CDC-BS076-VFO	21 mm	30 mm	8 - 11 mm

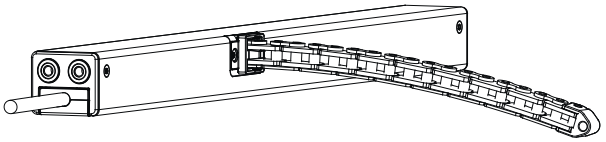
Side bow chain SBD / SBU

Drive chain with rigid backing, for non-pivoting (fixed) drives

Mounted installation

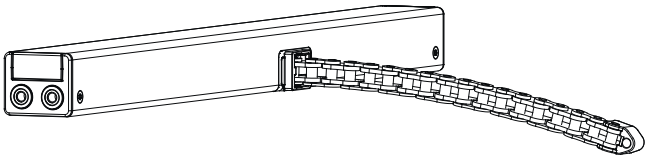


Side bow chain SBD

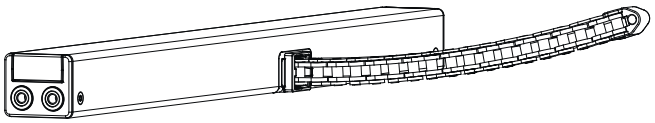


Side bow chain SBU

Integrated installation



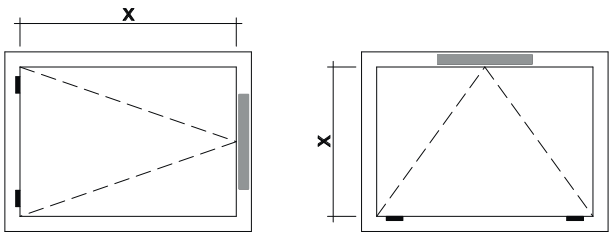
Side bow chain SBD



Side bow chain SBU

The specifications apply to **non-pivoting** drive installation.

Standard chain

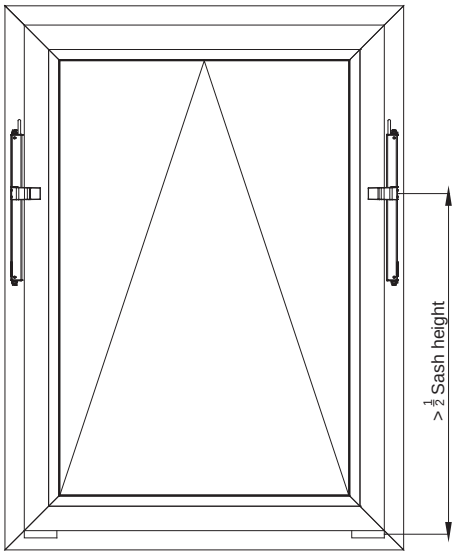


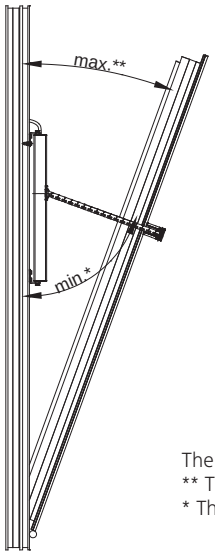
Minimum dimension (x) (mm) = stroke (mm) x 3.9

Side bow chain

Stroke	Minimum dimension (x)
350 mm	550 mm
400 mm	650 mm
500 mm	800 mm
600 mm	950 mm
800 mm	1250 mm
1000 mm	1550 mm

Drawbridge application

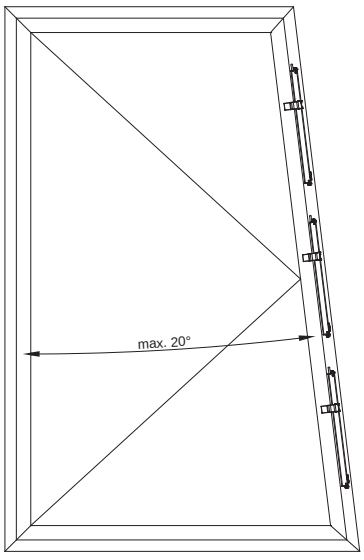




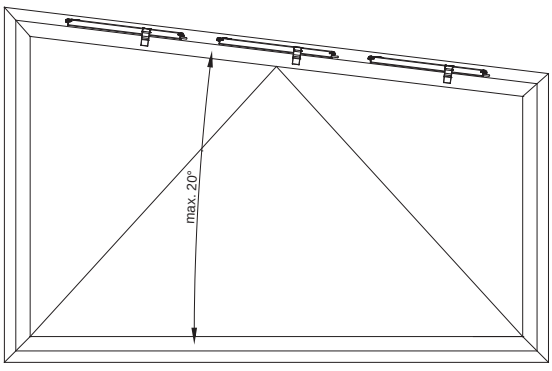
The drive must be mounted in the upper half of the opening sash.
** The opening angle of the window must not exceed 60°.
* The chain angle must not be less than 60°.

- The drawbridge application is available via “option ZB” for the CDC-0252-1-ACB (24 V DC) and CDC-0252-5-ACB (230 V AC).
- The drive will be delivered with a special chain guide and a special configuration.
- Do not use drives with side bow chains.
- Do not use standard drives.
- For installation use the bracket sets: BS-CDC-PI01-M-VFI and BS-CDC-PA01-M-VFO.

Trapezoidal application



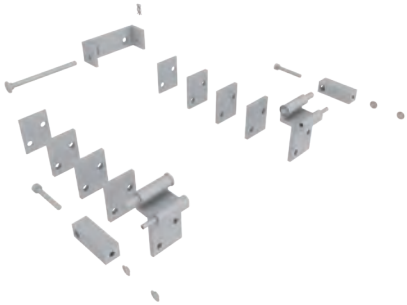
- While mounting the drive you have to make sure that the chain side is always installed towards the long window side.
- The drive with the longest stroke within the synchronous group has to be adressed as Master.
- Dimensions of the trapezoidal window: A window width of 2-3 m is recommended.
- The smallest chain stroke must not be less than 50 % to the largest chain stroke.



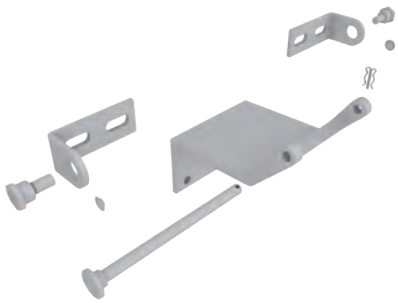
- The trapezoidal application is available for the CDC-0252-1-ACB and CDC-0252-5-ACB with side bow chain and a maximum stroke length of 800 mm.
- The drives can either be mounted on or integrated into the window profile.
- Information about the size of the drive groups for each trapezoidal window:
  - CDC-0252-1-ACB (24 V DC): 3 drive group
  - CDC-0252-5-ACB (230 V AC): 2 drive group
- For installation use the bracket sets: BS-CDC-PI01-M-VFI, BS-CDC-PA01-O-VFO and BS-CDC-PI01-O-VSI.

Bracket sets for KA

KA-BS050-VFO



KA-BS040-VSI

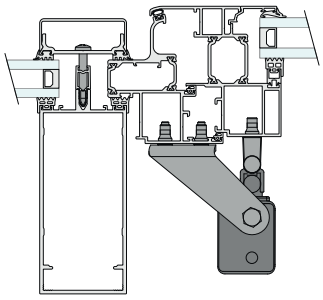


KA-BS046-VFI

Performance features

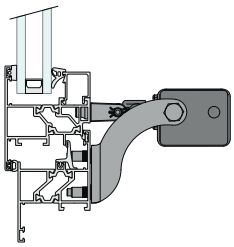
- Optimal adaptation of bracket sets to the respective profile system
- Solutions tested as complete systems for SHEV applications in accordance with EN 12101-2
- All materials required fastening materials are included in the scope of supply of the bracket sets
- Special colour as an option at the customer's request
- Application drawings suitable for window and façade manufacturers available

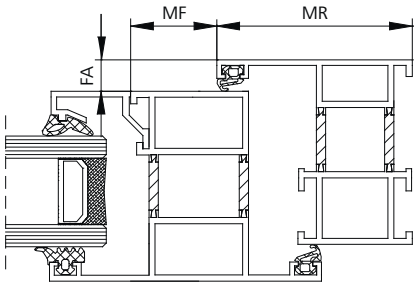
Roof window, outward opening



Profile manufacturer	Profile series	Art. No.	Bracket set
Aluprof®	MB-RW	26.AGA.KS	KA-BS096-VFO
Aluprof®	MB-SR50	26.ABY.KS	KA-BS020-VFO
Gutmann®	S70 roof	26.AAJ.KS	KA-BS002-VFO
Heroal®	180ES	26.AFU.KS	KA-BS090-VFO
Jet-Brakel®	Ventria TG	26.AAX.KS	KA-BS005-VFO
Raico®	FRAME+ 100/120RI	26.AGG.KS	KA-BS099-VFO
Raico®	FRAME+ 100/120RI-T	26.AGL.KS	KA-BS101-VFO
Raico®	WING 105D	26.AAJ.KS	KA-BS002-VFO
Reynaers®	CR 120	26.ABM.KS	KA-BS013-VFO
Reynaers®	Flush Roof Vent	26.AFE.KS	KA-BS080-VFO
Sapa®	SFB 5050	26.ABR.KS	KA-BS015-VFO
Sapa®	SFB 5060	26.ABR.KS	KA-BS015-VFO
Schüco®	AWS 57 RO	26.ADY.KS	KA-BS062-VFO
Schüco®	Royal S 106D	26.ABG.KS	KA-BS010-VFO
Schüco®	Royal S 47D	26.ADR.KS	KA-BS053-VFO
Schüco®	Royal S 88D	26.ABF.KS	KA-BS009-VFO
Technal®	MX	26.ABY.KS	KA-BS020-VFO
Wicona®	WICLINE 65	26.AFP.KS	KA-BS087-VFO
Wicona®	WICTEC 50/60	26.AAJ.KS	KA-BS002-VFO

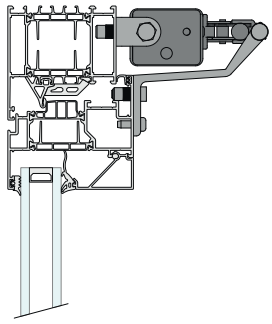
Top-hung window, outward opening

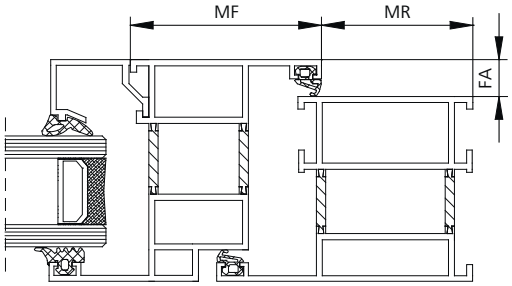




Profile manufacturer	Profile series	Art. No.	Bracket set	MF	MR	FA
Aluprof®	MB 59 Casement	26.AEY.KS	KA-BS076-VFO	14 mm	45 mm	0 - 20 mm
Raico®	WING 50 A-R	26.AAY.KS	KA-BS006-VFO			
Raico®	WING 50 A-S	26.AAY.KS	KA-BS006-VFO			
Reynaers®	CS 59	26.ACS.KS	KA-BS036-VFO	25 mm	40 mm	5 - 15 mm
Reynaers®	CS 68	26.ACS.KS	KA-BS036-VFO	25 mm	40 mm	5 - 15 mm
Reynaers®	CS 77	26.ACS.KS	KA-BS036-VFO	25 mm	40 mm	5 - 15 mm
Reynaers®	CS 86-HI	26.ACS.KS	KA-BS036-VFO	25 mm	40 mm	5 - 15 mm
Reynaers®	Eco	26.ACS.KS	KA-BS036-VFO	25 mm	40 mm	5 - 15 mm
Sapa®	SFB 1074	26.AEJ.KS	KA-BS074-VFO	12 mm	55 mm	5 - 15 mm
Schüco®	AWS 65	26.ACS.KS	KA-BS036-VFO	25 mm	40 mm	5 - 15 mm
Schüco®	AWS 70	26.ACS.KS	KA-BS036-VFO	25 mm	40 mm	5 - 15 mm
Schüco®	AWS 75	26.ACS.KS	KA-BS036-VFO	25 mm	40 mm	5 - 15 mm
Skandinaviska®	SGS	26.AEZ.KS	KA-BS077-VFO			

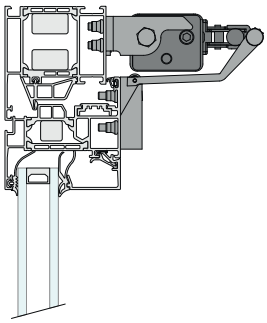
Bottom-hung and side-hung window, inward opening

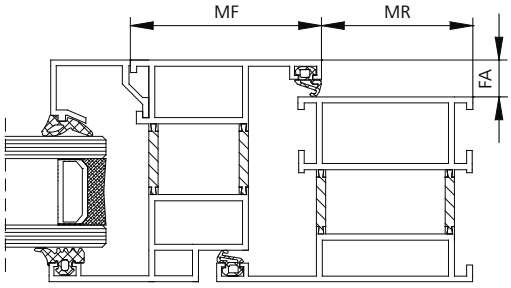




Profile manufacturer	Profile series	Art. No.	Bracket set	MF	MR	FA
Raico®	FRAME+ 75	26.AFW.KS	KA-BS092-VFI	42 mm	46 mm	0 - 20 mm
Raico®	FRAME+ 75	26.AFY.KS	KA-BS094-VSI	40 mm	29 mm	0 - 20 mm
Raico®	FRAME+ 75 WI	26.AFY.KS	KA-BS094-VSI	40 mm	29 mm	0 - 20 mm
Raico®	FRAME+ 90 WI	26.AFW.KS	KA-BS092-VFI	42 mm	46 mm	0 - 20 mm

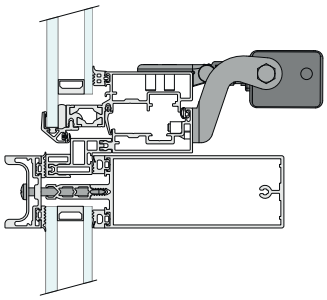
Side-hung vent window, inward opening





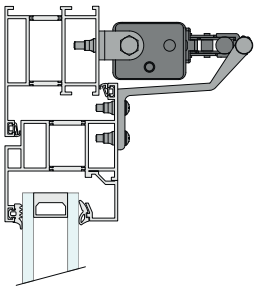
Profile manufacturer	Profile series	Art. No.	Bracket set	MF	MR	FA
Reynaers®	CS 59	26.AFL.KS	KA-BS085-VFIS	48 mm	45 mm	0 - 20 mm
Reynaers®	CS 68	26.AFL.KS	KA-BS085-VFIS	48 mm	45 mm	0 - 20 mm
Reynaers®	CS 77	26.AFL.KS	KA-BS085-VFIS	48 mm	45 mm	0 - 20 mm
Reynaers®	CS 86-HI	26.AFL.KS	KA-BS085-VFIS	48 mm	45 mm	0 - 20 mm
Reynaers®	Eco	26.AFL.KS	KA-BS085-VFIS	48 mm	45 mm	0 - 20 mm
Schüco®	AWS 65	26.AFL.KS	KA-BS085-VFIS	48 mm	45 mm	0 - 20 mm
Schüco®	AWS 70	26.AFL.KS	KA-BS085-VFIS	48 mm	45 mm	0 - 20 mm
Schüco®	AWS 75	26.AFL.KS	KA-BS085-VFIS	48 mm	45 mm	0 - 20 mm

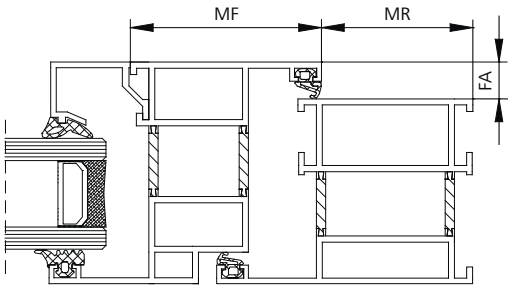
Projected top-hung, parallel opening window, outward opening



Profile manufacturer	Profile series	Art. No.	Bracket set
Gutmann®	S70 roof	26.AAF.KS	KA-BS001-VFO
Gutmann®	S70 SK	26.AAY.KS	KA-BS006-VFO
Raico®	FRAME+ 75 WA	26.AFX.KS	KA-BS093-VFO
Raico®	WING 50 SK-R	26.AAY.KS	KA-BS006-VFO
Raico®	WING 50 SK-S	26.AAY.KS	KA-BS006-VFO
Reynaers®	CW 50	26.AEN.KS	KA-BS075-VFO
Schüco®	AWS 102 SK (339 470)	26.AAF.KS	KA-BS001-VFO
Schüco®	AWS 102 SK (339 490)	26.ADJ.KS	KA-BS051-VFO

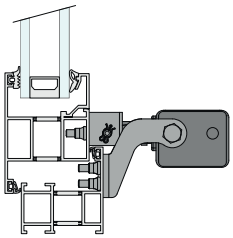
Universal bracket sets, inward opening

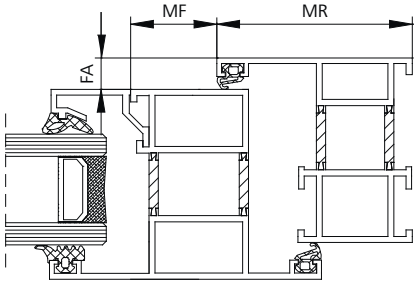




Application	Art. No.	Bracket set	MF	MR	FA
Window frame mounting, inward opening	26.ADC.KS	KA-BS046-VFI	42 mm	46 mm	0 - 20 mm
Window frame mounting, inward opening	26.AFJ.KS	KA-BS083-VFIS	48 mm	45 mm	0 - 20 mm
Sash mounting, inward opening	26.ACW.KS	KA-BS040-VSI	40 mm	29 mm	0 - 20 mm
Side-hung vent, inward opening	26.AFR.KS	KA-BS088-VSIS	40 mm	32 mm	0 - 20 mm
Inward opening, variable	26.ADT.KS	KA-BS059-VFI	60 mm	49 mm	48 - 112 mm

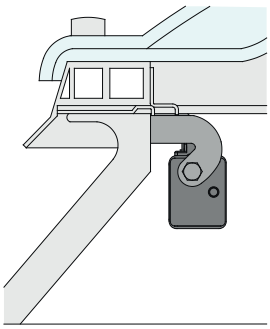
Universal bracket sets, outward opening





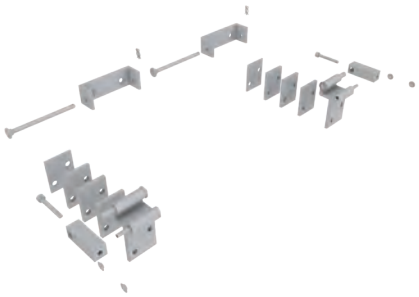
Application	Art. No.	Bracket set	MF	MR	FA
Window frame mounting, outward opening	26.ADG.KS	KA-BS050-VFO	30 mm	30 mm	0 - 20 mm

Brackets for skylights

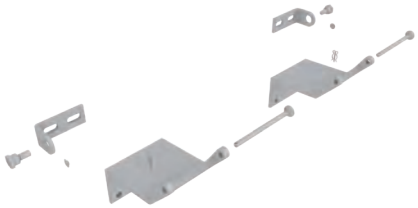


Skylight type	Art. No.	Bracket set
Jet®	21.051.70	LKJ-KA
Kleen®	21.050.60	LKK-KA
Lamilux®	21.052.50	LKL-KA

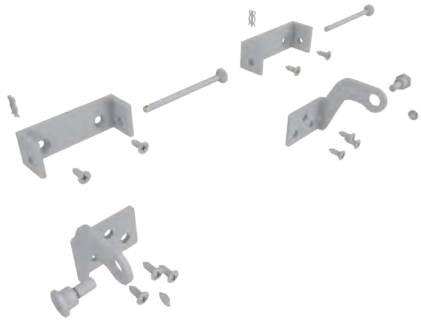
Bracket sets for KA-TW



KA-TW-BS041-VSI



KA-TW-BS047-VFI

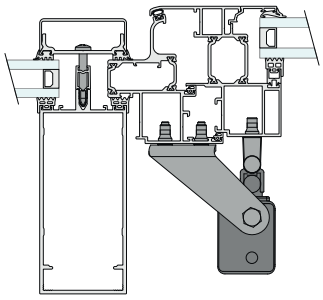


KA-TW-BS052-VFO

Performance features

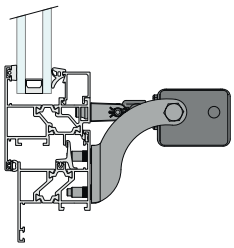
- Optimal adaptation of bracket sets to the respective profile system
- Solutions tested as complete systems for SHEV applications in accordance with EN 12101-2
- All materials required fastening materials are included in the scope of supply of the bracket sets
- Special colour as an option at the customer's request
- Application drawings suitable for window and façade manufacturers available

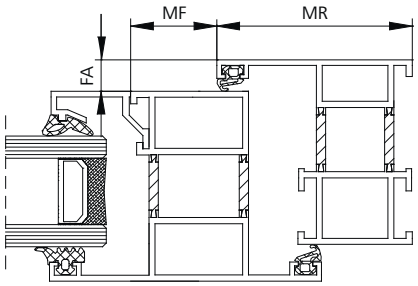
Roof window, outward opening



Profile manufacturer	Profile series	Art. No.	Bracket set
Aluprof®	MB-RW	26.AGB.KS	KA-TW-BS097-VFO
Aluprof®	MB-SR50	26.ACP.KS	KA-TW-BS035-VFO
Gutmann®	S70 roof	26.ACE.KS	KA-TW-BS026-VFO
Heroal®	180	26.ACH.KS	KA-TW-BS029-VFO
Heroal®	180ES	26.AFV.KS	KA-TW-BS091-VFO
Jet-Brakel®	Ventria TG	26.ACL.KS	KA-TW-BS032-VFO
Raico®	FRAME+ 100/120RI	26.AGH.KS	KA-TW-BS100-VFO
Raico®	FRAME+ 100/120RI-T	26.AGM.KS	KA-TW-BS102-VFO
Raico®	WING 105D	26.ACE.KS	KA-TW-BS026-VFO
Reynaers®	CR 120	26.ACJ.KS	KA-TW-BS030-VFO
Reynaers®	Flush Roof Vent	26.AFG.KS	KA-TW-BS081-VFO
Sapa®	SFB 5050	26.ACK.KS	KA-TW-BS031-VFO
Sapa®	SFB 5060	26.ACK.KS	KA-TW-BS031-VFO
Schüco®	AWS 57 RO	26.AEA.KS	KA-TW-BS064-VFO
Schüco®	Royal S 106D	26.ACG.KS	KA-TW-BS028-VFO
Schüco®	Royal S 88D	26.ACF.KS	KA-TW-BS027-VFO
Technal®	MX	26.ACP.KS	KA-TW-BS035-VFO
Wicona®	WICTEC 50/60	26.ACE.KS	KA-TW-BS026-VFO

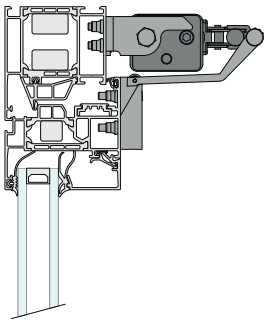
Top-hung window, outward opening

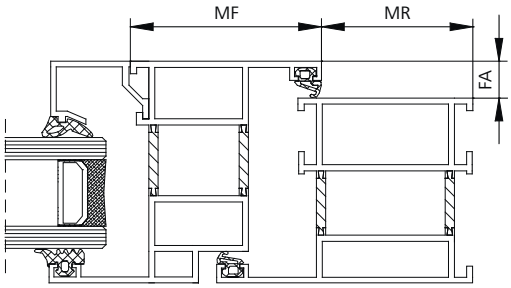




Profile manufacturer	Profile series	Art. No.	Bracket set	MF	MR	FA
Aluprof®	MB 59 Casement	26.AFD.KS	KA-TW-BS079-VFO	14 mm	45 mm	0 - 20 mm
Reynaers®	CS 59	26.ACV.KS	KA-TW-BS039-VFO	48 mm	45 mm	0 - 20 mm
Reynaers®	CS 68	26.ACV.KS	KA-TW-BS039-VFO	48 mm	45 mm	0 - 20 mm
Reynaers®	CS 77	26.ACV.KS	KA-TW-BS039-VFO	48 mm	45 mm	0 - 20 mm
Reynaers®	CS 86-HI	26.ACV.KS	KA-TW-BS039-VFO	48 mm	45 mm	0 - 20 mm
Reynaers®	Eco	26.ACV.KS	KA-TW-BS039-VFO	48 mm	45 mm	0 - 20 mm
Schüco®	AWS 65	26.ACV.KS	KA-TW-BS039-VFO	48 mm	45 mm	0 - 20 mm
Schüco®	AWS 70	26.ACV.KS	KA-TW-BS039-VFO	48 mm	45 mm	0 - 20 mm
Schüco®	AWS 75	26.ACV.KS	KA-TW-BS039-VFO	48 mm	45 mm	0 - 20 mm
Skandinaviska®	SGS	26.AFB.KS	KA-TW-BS078-VFO			

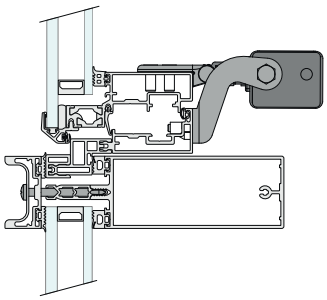
Side-hung vent window, inward opening





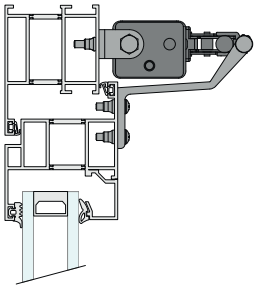
Profile manufacturer	Profile series	Art. No.	Bracket set	MF	MR	FA
Reynaers®	CS 59	26.AFM.KS	KA-TW-BS086-VFIS	48 mm	45 mm	0 - 20 mm
Reynaers®	CS 68	26.AFM.KS	KA-TW-BS086-VFIS	48 mm	45 mm	0 - 20 mm
Reynaers®	CS 77	26.AFM.KS	KA-TW-BS086-VFIS	48 mm	45 mm	0 - 20 mm
Reynaers®	CS 86-HI	26.AFM.KS	KA-TW-BS086-VFIS	48 mm	45 mm	0 - 20 mm
Reynaers®	Eco	26.AFM.KS	KA-TW-BS086-VFIS	48 mm	45 mm	0 - 20 mm
Schüco®	AWS 65	26.AFM.KS	KA-TW-BS086-VFIS	48 mm	45 mm	0 - 20 mm
Schüco®	AWS 70	26.AFM.KS	KA-TW-BS086-VFIS	48 mm	45 mm	0 - 20 mm
Schüco®	AWS 75	26.AFM.KS	KA-TW-BS086-VFIS	48 mm	45 mm	0 - 20 mm

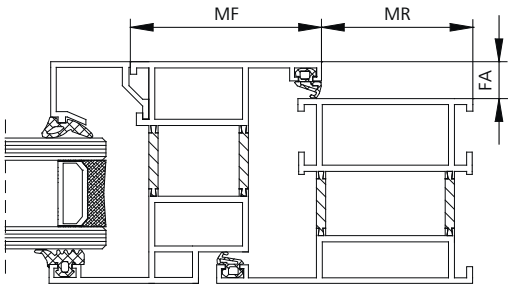
Projected top-hung, parallel opening window, outward opening



Profile manufacturer	Profile series	Art. No.	Bracket set
Schüco®	AWS 102 SK (339 470)	26.ADB.KS	KA-TW-BS045-VFO
Schüco®	AWS 102 SK (339 490)	26.AEG.KS	KA-TW-BS068-VFO

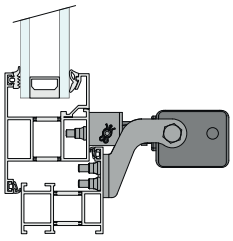
Universal bracket sets, inward opening

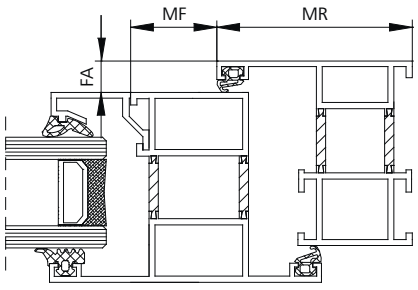




Application	Art. No.	Bracket set	MF	MR	FA
Side-hung vent, inward opening	26.AFK.KS	KA-TW-BS084-VFIS	48 mm	45 mm	0 - 20 mm
Inward opening	26.ACX.KS	KA-TW-BS041-VSI	40 mm	29 mm	0 - 20 mm
Inward opening	26.ADD.KS	KA-TW-BS047-VFI	42 mm	46 mm	0 - 20 mm

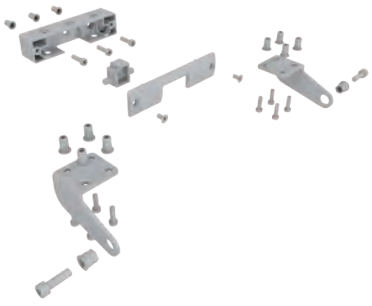
Universal bracket sets, outward opening



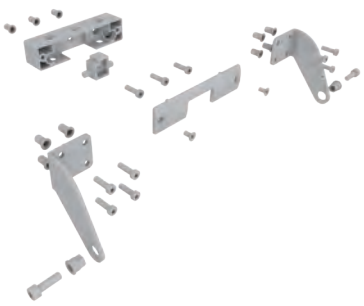


Application	Art. No.	Bracket set	MF	MR	FA
Outward opening	26.ADP.KS	KA-TW-BS052-VFO	30 mm	30 mm	0 - 20 mm

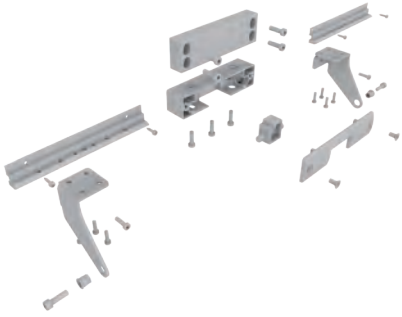
Bracket sets for CDP



CDP-BS001-OM



CDP-BS002-OM

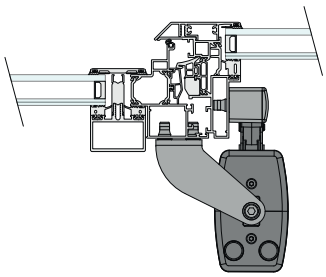


CDP-BS019-OM

Performance features

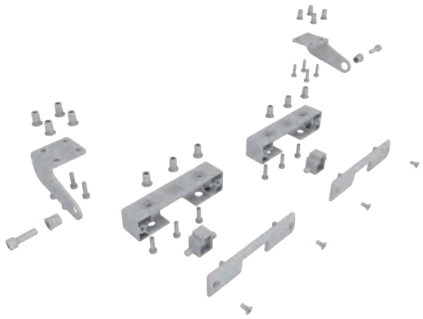
- Optimal adaptation of bracket sets to the respective profile system
- Solutions tested as complete systems for SHEV applications in accordance with EN 12101-2
- All materials required fastening materials are included in the scope of supply of the bracket sets
- Special colour as an option at the customer's request
- Application drawings suitable for window and façade manufacturers available

Roof window, outward opening

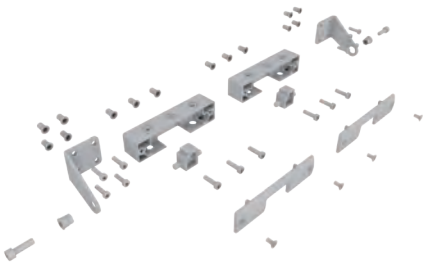


Profile manufacturer	Profile series	Art. No.	Bracket set
Aluprof®	MB-RW	26.CBF.KS	CDP-BS021-OM
Aluprof®	MB-SR50	26.CAK.KS	CDP-BS002-OM
Gutmann®	S70 roof	26.CAK.KS	CDP-BS002-OM
Heroal®	180	26.CAP.KS	CDP-BS007-OM
Heroal®	C 50 HI	26.CBM.KS	CDP-BS023-OM
Hueck®	1.0	26.CAN.KS	CDP-BS005-OM
Jet-Brakel®	Ventria TG	26.CAN.KS	CDP-BS005-OM
Raico®	FRAME+ 100/120RI	26.CBN.KS	CDP-BS024-OM
Raico®	FRAME+ 100RI-T	26.CBP.KS	CDP-BS026-OM
Raico®	FRAME+ 120RI-T	26.CBR.KS	CDP-BS028-OM
Raico®	WING 105D	26.CAK.KS	CDP-BS002-OM
Raico®	WING 105DI	26.CAS.KS	CDP-BS019-OM
Raico®	WING 50	26.CBD.KS	CDP-BS017-OM
Reynaers®	Flush Roof Vent	26.CAM.KS	CDP-BS004-OM
Sapa®	SFB 5050	26.CAN.KS	CDP-BS005-OM
Schüco®	AWS 57 RO (331 820)	26.CAL.KS	CDP-BS003-OM
Schüco®	AWS 57 RO (369 780)	26.CAJ.KS	CDP-BS001-OM
Technal®	MX	26.CAK.KS	CDP-BS002-OM
Wicona®	WICTEC 50/60	26.CAK.KS	CDP-BS002-OM

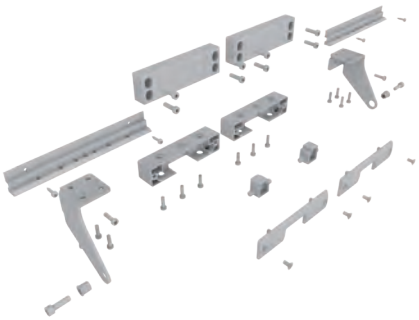
Bracket sets for CDP-TW



CDP-TW-BS009-OM



CDP-TW-BS011-OM

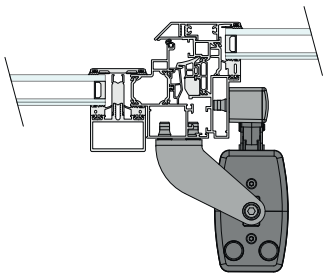


CDP-TW-BS020-OM

Performance features

- Optimal adaptation of bracket sets to the respective profile system
- Solutions tested as complete systems for SHEV applications in accordance with EN 12101-2
- All materials required fastening materials are included in the scope of supply of the bracket sets
- Special colour as an option at the customer's request
- Application drawings suitable for window and façade manufacturers available

Roof window, outward opening



Profile manufacturer	Profile series	Art. No.	Bracket set
Aluprof®	MB-RW	26.CBG.KS	CDP-TW-BS022-OM
Aluprof®	MB-SR50	26.CAU.KS	CDP-TW-BS010-OM
Gutmann®	S70 roof	26.CAU.KS	CDP-TW-BS010-OM
Heroal®	180	26.CAZ.KS	CDP-TW-BS015-OM
Hueck®	1.0	26.CAX.KS	CDP-TW-BS013-OM
Jet-Brakel®	Ventria TG	26.CAX.KS	CDP-TW-BS013-OM
Raico®	FRAME+ 100/120RI	26.CBO.KS	CDP-TW-BS025-OM
Raico®	FRAME+ 100RI-T	26.CBQ.KS	CDP-TW-BS027-OM
Raico®	FRAME+ 120RI-T	26.CBS.KS	CDP-TW-BS029-OM
Raico®	WING 105D	26.CAU.KS	CDP-TW-BS010-OM
Raico®	WING 105DI	26.CBB.KS	CDP-TW-BS020-OM
Raico®	WING 50	26.CBE.KS	CDP-TW-BS018-OM
Reynaers®	Flush Roof Vent	26.CAW.KS	CDP-TW-BS012-OM
Sapa®	SFB 5050	26.CAX.KS	CDP-TW-BS013-OM
Schüco®	AWS 57 RO (331 820)	26.CAV.KS	CDP-TW-BS011-OM
Schüco®	AWS 57 RO (369 780)	26.CAT.KS	CDP-TW-BS009-OM
Technal®	MX	26.CAU.KS	CDP-TW-BS010-OM
Wicona®	WICTEC 50/60	26.CAU.KS	CDP-TW-BS010-OM

Bracket sets for ZA

ZA-BS043-SM

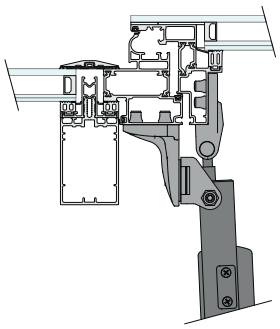
ZA-BS044-OM

ZA-BS045-SM

Performance features

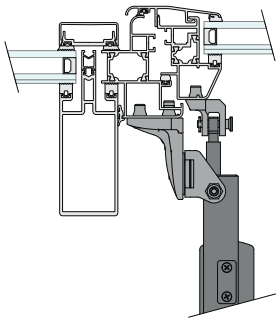
- Optimal adaptation of bracket sets to the respective profile system
- Solutions tested as complete systems for SHEV applications in accordance with EN 12101-2
- All materials required fastening materials are included in the scope of supply of the bracket sets
- Special colour as an option at the customer's request
- Application drawings suitable for window and façade manufacturers available

Roof windows, outward opening, installation opposite the hinge



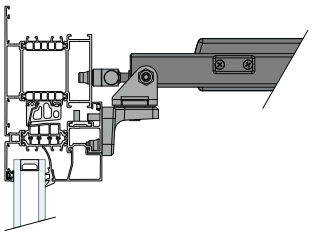
Profile manufacturer	Profile series	Art. No.	Bracket set
Aluprof®	MB-RW	27.BDK.KS	ZA-BS044-OM
Aluprof®	MB-SR50	27.BCW.KS	ZA-BS034-OM
Heroal®	180	27.BAM.KS	ZA-BS006-OM
Heroal®	180ES	27.BDH.KS	ZA-BS040-OM
Jet-Brakel®	Ventria TG	27.BAR.KS	ZA-BS008-OM
Raico®	FRAME+ 100/120RI	27.BDT.KS	ZA-BS049-OM
Raico®	FRAME+ 100RI-T	27.BDV.KS	ZA-BS051-OM
Raico®	FRAME+ 120RI-T	27.BDX.KS	ZA-BS053-OM
Raico®	WING 105D	27.BDA.KS	ZA-BS042-OM
Reynaers®	CR 120	27.BBZ.KS	ZA-BS021-OM
Reynaers®	Flush Roof Vent	27.BDE.KS	ZA-BS037-OM
Sapa®	SFB 5050	27.BBP.KS	ZA-BS016-OM
Sapa®	SFB 5060	27.BBP.KS	ZA-BS016-OM
Schüco®	AWS 57 RO (331 810)	27.BCR.KS	ZA-BS030-OM
Schüco®	AWS 57 RO (331 820)	27.BCR.KS	ZA-BS030-OM
Schüco®	AWS 57 RO (369 770)	27.BCM.KS	ZA-BS028-OM
Schüco®	AWS 57 RO (369 780)	27.BCM.KS	ZA-BS028-OM
Schüco®	Royal S 106D	27.BBE.KS	ZA-BS012-OM
Schüco®	Royal S 88D	27.BBC.KS	ZA-BS010-OM
Wicona®	WICTEC 50/60	27.BAF.KS	ZA-BS001-OM

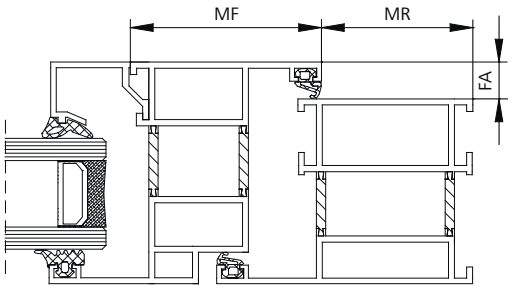
Roof windows, outward opening, side installation



Profile manufacturer	Profile series	Art. No.	Bracket set
Aluprof®	MB-RW	27.BDL.KS	ZA-BS045-SM
Aluprof®	MB-SR50	27.BCV.KS	ZA-BS033-SM
Heroal®	180	27.BAK.KS	ZA-BS005-SM
Heroal®	180ES	27.BDJ.KS	ZA-BS041-SM
Jet-Brakel®	Ventria TG	27.BAP.KS	ZA-BS007-SM
Raico®	FRAME+ 100/120RI	27.BDS.KS	ZA-BS048-SM
Raico®	FRAME+ 100RI-T	27.BDU.KS	ZA-BS050-SM
Raico®	FRAME+ 120RI-T	27.BDW.KS	ZA-BS052-SM
Raico®	WING 105D	27.BCZ.KS	ZA-BS043-SM
Reynaers®	CR 120	27.BBY.KS	ZA-BS020-SM
Reynaers®	Flush Roof Vent	27.BDF.KS	ZA-BS038-SM
Sapa®	SFB 5050	27.BBN.KS	ZA-BS015-SM
Sapa®	SFB 5060	27.BBN.KS	ZA-BS015-SM
Schüco®	AWS 57 RO (331 810)	27.BCP.KS	ZA-BS031-SM
Schüco®	AWS 57 RO (331 820)	27.BCP.KS	ZA-BS031-SM
Schüco®	AWS 57 RO (369 770)	27.BCN.KS	ZA-BS029-SM
Schüco®	AWS 57 RO (369 780)	27.BCN.KS	ZA-BS029-SM
Schüco®	Royal S 106D	27.BBD.KS	ZA-BS011-SM
Schüco®	Royal S 88D	27.BAT.KS	ZA-BS009-SM
Wicona®	WICTEC 50/60	27.BAE.KS	ZA-BS002-SM

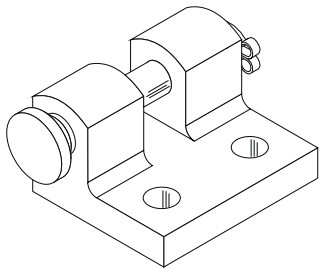
Façade window (bottom-hung and top-hung windows)

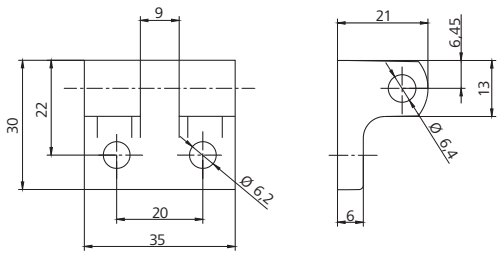




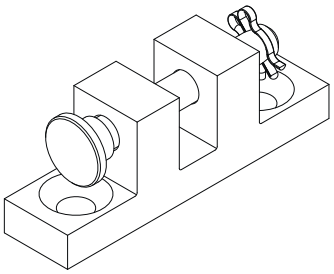
Profile manufacturer	Profile series	Art. No.	Bracket set	MF	MR	FA
Reynaers®	CS 59	27.BCH.KS	ZA-BS027-OM	45 mm	36 mm	10 - 20 mm
Reynaers®	CS 68	27.BCH.KS	ZA-BS027-OM	45 mm	36 mm	10 - 20 mm
Reynaers®	CS 77	27.BCH.KS	ZA-BS027-OM	45 mm	36 mm	10 - 20 mm
Reynaers®	CS 86-HI	27.BCH.KS	ZA-BS027-OM	45 mm	36 mm	10 - 20 mm
Reynaers®	Eco	27.BCH.KS	ZA-BS027-OM	45 mm	36 mm	10 - 20 mm

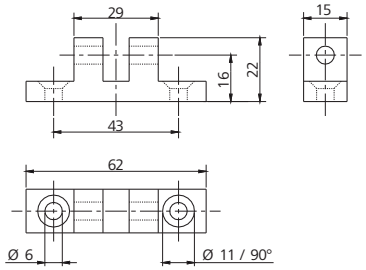
Sash bracket	Art. No.	Weight	Description
FK	20.050.80	0.07 kg	» With releasable bolt » Die-cast zinc, polished



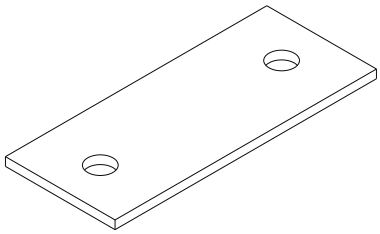


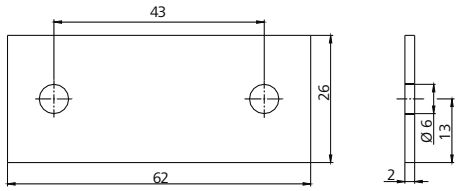
Sash bracket	Art. No.	Weight	Description
FK-D	20.052.20	0.10 kg	» With releasable bolt » Aluminium, silver anodised



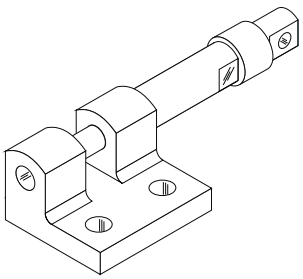


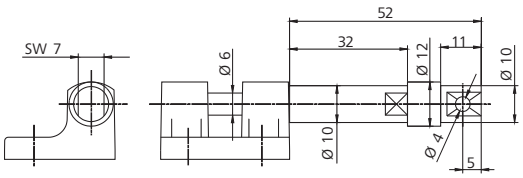
Cover sheet	Art. No.	Weight	Description
AD-FK	68.100.03	0.02 kg	» Cover sheet for FK-D » Aluminium, silver anodised



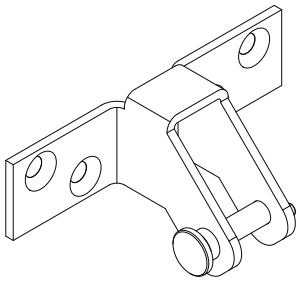


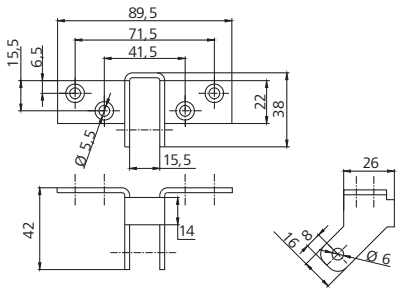
Sash bracket	Art. No.	Weight	Description
FKE	20.052.30	0.09 kg	» With spring-loaded release pin, e.g. for roof access trapdoor » Die-cast zinc, polished



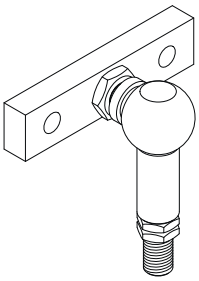


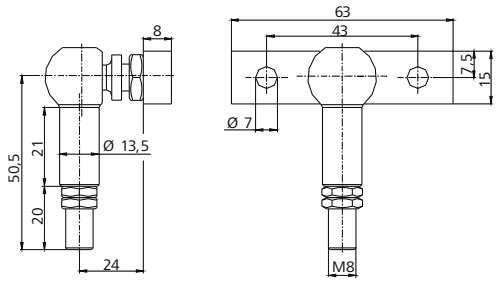
Sash bracket	Art. No.	Weight	Description
FKK	20.052.40	0.15 kg	» With releasable bolt » V2A, polished



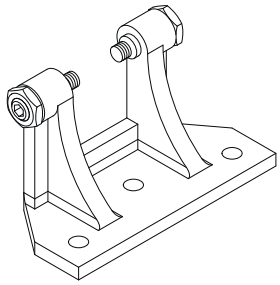


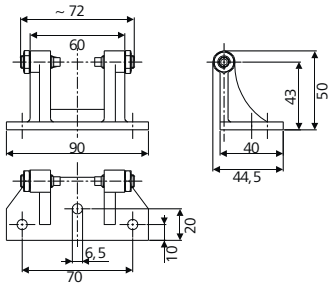
Ball angle joint	Art. No.	Weight	Description
KWG	20.051.40	0.10 kg	» As eyebolt replacement (pull-out strength approx. 1500 N) » Aluminium / Steel



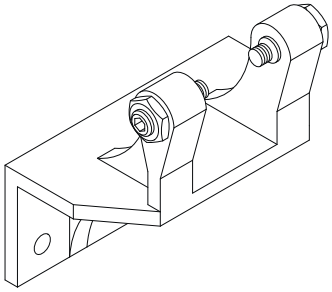


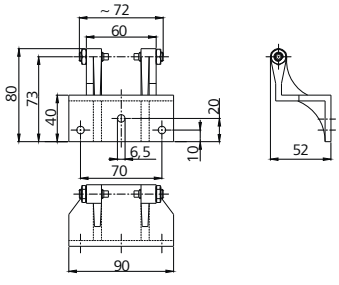
Angle bracket	Art. No.	Weight	Description
WK 6	20.052.60	0.10 kg	» Bracket with 2 stud bolts and locknuts » Die-cast aluminium, polished



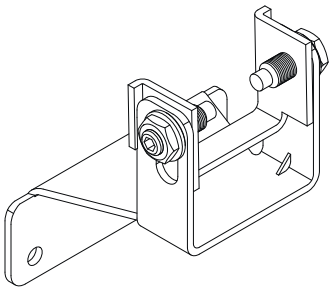


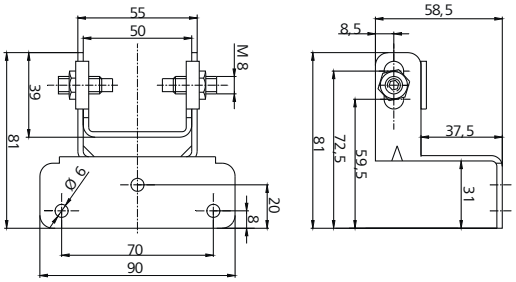
Angle bracket	Art. No.	Weight	Description
ZK 6	20.052.70	0.14 kg	» Bracket with 2 stud bolts and locknuts » Die-cast aluminium, polished



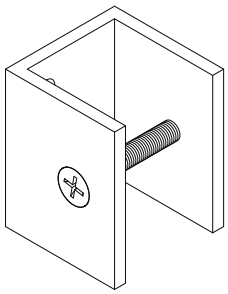


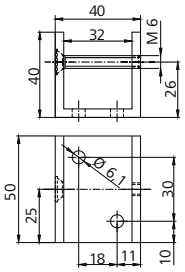
Z-bracket	Art. No.	Weight	Description
ZKK	20.052.80	0.20 kg	» Adjustable bracket with 2 stud bolts and locknuts » V2A, polished



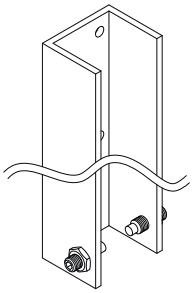


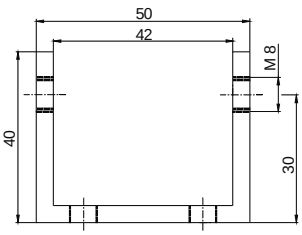
U-bracket	Art. No.	Weight	Description
UK 50	20.050.00	0.06 kg	» Bracket with through bolt » Aluminium, silver anodised



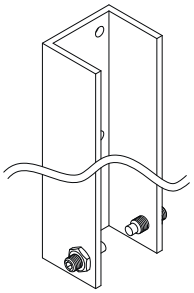


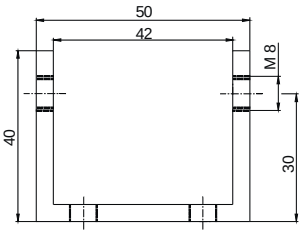
U-bracket	Art. No.	Weight	Description
UK 350	20.050.10	0.40 kg	» Bracket with 2 stud bolts and locknuts » Length 350 mm » Aluminium, silver anodised



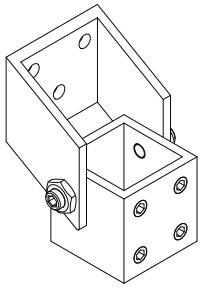


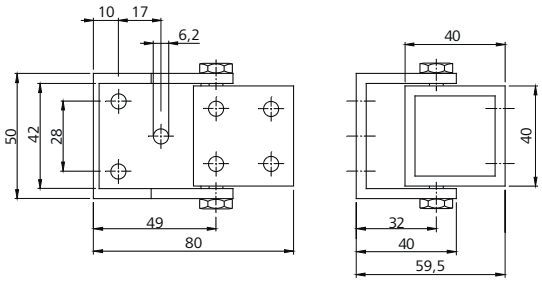
U-bracket	Art. No.	Weight	Description
UK 500	20.050.20	0.60 kg	» Bracket with 2 stud bolts and locknuts » Length 500 mm » Aluminium, silver anodised



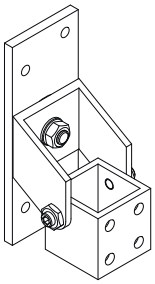


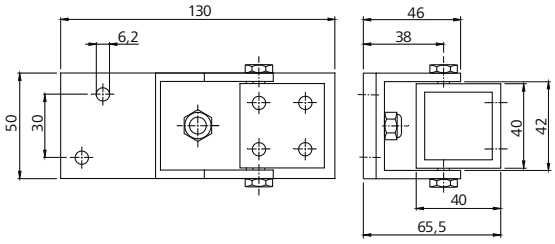
Pivot point displacement bracket	Art. No.	Weight	Description
DPK 6	20.052.00	0.14 kg	» Bracket with terminal part, 2 stud bolts and locknuts » Aluminium, silver anodised



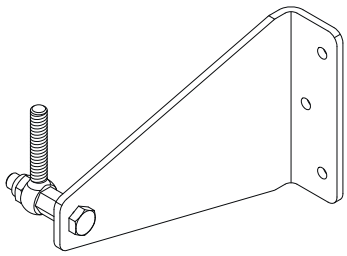


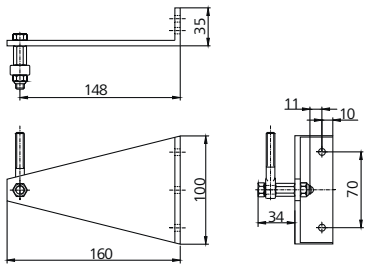
Pivot point displacement bracket	Art. No.	Weight	Description
DPK 8	20.051.50	0.20 kg	» Pivoting bracket with mounting plate, terminal part, 2 stud bolts and locknuts » Aluminium, silver anodised



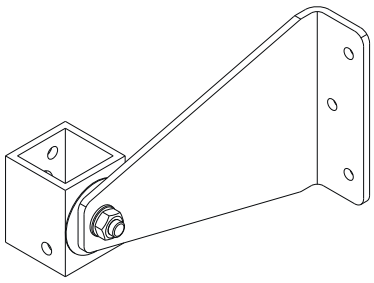


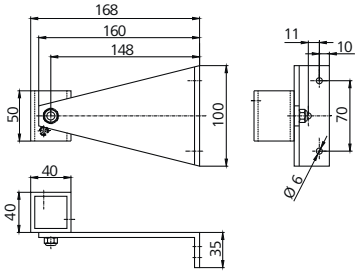
Side bracket	Art. No.	Weight	Description
SK	20.050.40	0.32 kg	» Bracket for diagonal installation of drive on window sashes » Aluminium, silver anodised





Side bracket	Art. No.	Weight	Description
SK-D	20.050.60	0.30 kg	» Pivoting bracket for diagonal installation of drive on window sashes » Consisting of DPK terminal part installed on SK triangular bracket » Aluminium, silver anodised





Bracket sets for DXD

DXD-BS011-OM

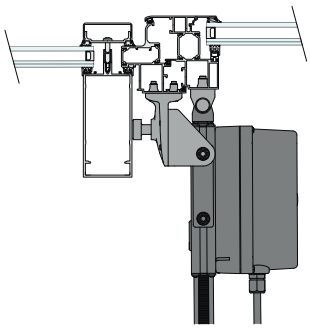
DXD-BS012-SM

DXD-BS036-OM

Performance features

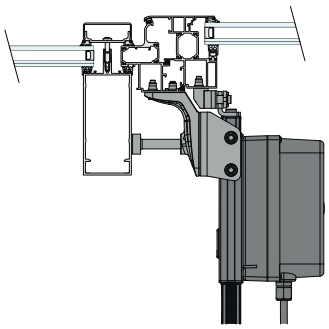
- Optimal adaptation of bracket sets to the respective profile system
- Solutions tested as complete systems for SHEV applications in accordance with EN 12101-2
- All materials required fastening materials are included in the scope of supply of the bracket sets
- Special colour as an option at the customer's request
- Application drawings suitable for window and façade manufacturers available

Roof windows, outward opening, installation opposite the hinge



Profile manufacturer	Profile series	Art. No.	Bracket set
Aluprof®	MB-RW	27.ADS.KS	DXD-BS038-OM
Gutmann®	S70	27.AAZ.KS	DXD-BS011-OM
Heroal®	180	27.ABS.KS	DXD-BS009-OM
Jet-Brakel®	Ventria TG	27.ACF.KS	DXD-BS021-OM
Raico®	FRAME+ 100/120RI	27.ADX.KS	DXD-BS041-OM
Raico®	FRAME+ 100RI-T	27.ADZ.KS	DXD-BS043-OM
Raico®	FRAME+ 120RI-T	27.AEB.KS	DXD-BS045-OM
Raico®	WING 105DI (208310)	27.ADD.KS	DXD-BS036-OM
Raico®	WING 105DI (208312)	27.ADE.KS	DXD-BS037-OM
Reynaers®	CR 120	27.ACL.KS	DXD-BS023-OM
Reynaers®	Flush Roof Vent	27.ADM.KS	DXD-BS031-OM
Sapa®	SFB 5050	27.ACD.KS	DXD-BS019-OM
Sapa®	SFB 5060	27.ACD.KS	DXD-BS019-OM
Schüco®	AWS 57 RO	27.ACW.KS	DXD-BS028-OM
Schüco®	Royal S 106D	27.AAP.KS	DXD-BS005-OM
Schüco®	Royal S 88D	27.ABD.KS	DXD-BS007-OM
Wicona®	WICTEC 50/60	27.AAK.KS	DXD-BS003-OM

Roof windows, outward opening, side installation



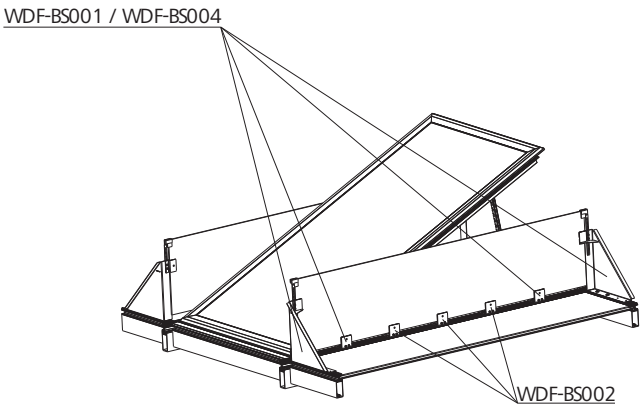
Profile manufacturer	Profile series	Art. No.	Bracket set
Aluprof®	MB-RW	27.ADT.KS	DXD-BS039-SM
Aluprof®	MB-SR50	27.ADA.KS	DXD-BS030-SM
Gutmann®	S70	27.ABB.KS	DXD-BS012-SM
Heroal®	180	27.ABU.KS	DXD-BS010-SM
Heroal®	180ES	27.ADR.KS	DXD-BS033-SM
Jet-Brakel®	Ventria TG	27.ACG.KS	DXD-BS022-SM
Raico®	WING 105DI (208310)	27.ADB.KS	DXD-BS034-SM
Raico®	WING 105DI (208312)	27.ADC.KS	DXD-BS035-SM
Reynaers®	CR 120	27.ACM.KS	DXD-BS024-SM
Reynaers®	Flush Roof Vent	27.ADN.KS	DXD-BS032-SM
Sapa®	SFB 5050	27.ACE.KS	DXD-BS020-SM
Sapa®	SFB 5060	27.ACE.KS	DXD-BS020-SM
Schüco®	AWS 57 RO	27.ACX.KS	DXD-BS029-SM
Schüco®	Royal S 106D	27.AAR.KS	DXD-BS006-SM
Schüco®	Royal S 88D	27.ABF.KS	DXD-BS008-SM
Wicona®	WICTEC 50/60	27.AAG.KS	DXD-BS001-SM
Raico®	FRAME+ 100/120RI	27.ADW.KS	DXD-BS040-SM
Raico®	FRAME+ 100RI-T	27.ADY.KS	DXD-BS042-SM
Raico®	FRAME+ 120RI-T	27.AEA.KS	DXD-BS044-SM

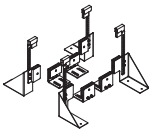
WDF-BS

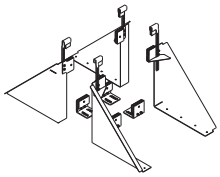
Performance features

- For increasing the aerodynamic effectiveness of natural smoke and heat exhaust ventilators (NSHEV) in the roof in cases of strong winds
- No wind-direction-dependent controller required and, therefore, no doubled number of NSHEVs
- Visually appealing solution made out of glass or a low-cost solution out of sheet metal
- Universally compatible installation sets for wind deflectors made of glass

Example of application




WDF-BS001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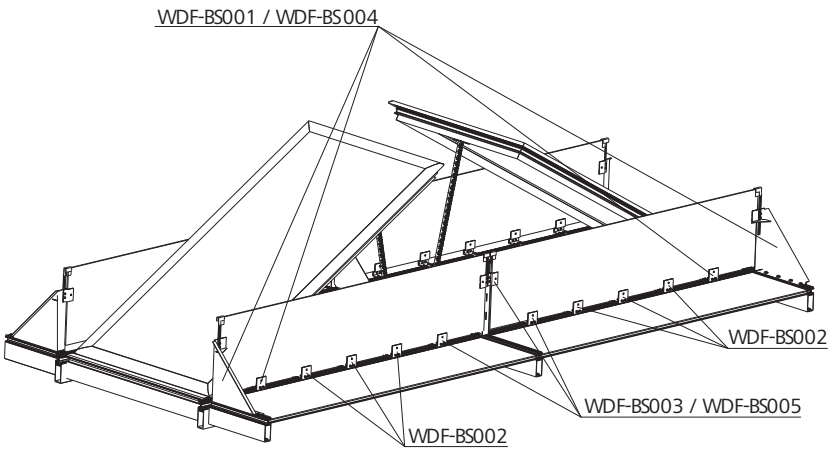
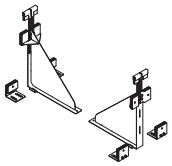
WDF-BS002




WDF-BS003


WDF-BS005

Technical data

For details on WDF fittings, refer to the
D+H wind deflector brochure.

Design *

Type	Art. No.	Weight	Remark
WDF-BS001	27.BAA.ZU	4.75 kg	Corner brackets up to 300 mm tall
WDF-BS002	27.BAB.ZU	1.18 kg	Side brackets up to 500 mm tall
WDF-BS003	27.BAC.ZU	5.10 kg	Centre brackets up to 300 mm tall
WDF-BS004	27.BAD.ZU	14.49 kg	Corner brackets up to 500 mm tall
WDF-BS005	27.BAE.ZU	9.11 kg	Centre brackets up to 500 mm tall

* The glass is not part of the D+H scope of supply!
A manufacturing drawing is available for ordering the glass.

Höfe am Brühl, Leipzig, Germany
© D+H Mechatronic AG

Appendix

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TERMS AND CONDITIONS OF SALE AND SUPPLY FOR BUSINESS TRANSACTIONS WITH CONTRACTORS

I. General Provisions

1. A Contractor in terms of these Terms and Conditions is defined as any natural person or legal entity or private limited company having legal capacity from private or public law or a special estate under public law that has entered into a business relationship and acts in the exercise of a commercial or independent professional activity.

2. The conditions below shall apply for all business relationships and shall also be used with respect to business entities (referred to hereinafter as Buyer) as the foundation for all future business. The version currently valid at the time of conclusion of the contract is authoritative. The mutual written declarations shall be authoritative for the scope of the deliveries or services (hereinafter referred to together as Deliveries). However, the Buyer's General Terms and Conditions shall apply only insofar as D+H Mechatronic AG (referred to hereinafter as D+H) has expressly approved them in writing.

II. Offer, Conclusion of Contract

1. D+H shall be bound by all offers for three months. The contractual relationship shall become effective upon the receipt at D+H of the offer countersigned by the Buyer. However, the Buyer shall be obligated to notify D+H immediately if the Buyer does not accept the order.

2. The transfer of the Buyer's rights and duties under the contract or the resale of Deliveries before its receipt requires written consent from D+H. Moreover, D+H might withdraw from the contract at any time by a respective written declaration.

3. D+H reserves the right to produce deviations from samples or earlier Deliveries due to manufacturing requirements in order to improve the product.

III. Prices and Payment Conditions

1. The prices are based on Deliveries ex works plus the respective applicable statutory value-added tax.

2. If D+H is responsible for installation or assembly and nothing else is agreed upon, the Buyer shall, in addition to the arranged price, bear all required ancillary costs, such as travel costs, costs for transporting necessary tools and personal luggage, and per diem allowances or similar.

3. Payments shall be made to D+H within 8 days from the date of invoice, with 3% discount, or 30 days net, and free of transaction charges.

4. The Buyer may only set off such counterclaims that have been expressly acknowledged by D+H or which have been conclusively determined by a court; a right of retention may only be claimed if it is based on claims under the contract.

5. Each order will be processed with a minimum order value of 150.00 €. It is incumbent on the customer to observe this minimum value.

IV. Retention of Title

1. The objects of the Deliveries (Retained Goods) shall remain the property of D+H until all claims from the business relationship owed by the Buyer are fulfilled. If the realizable value of all security rights to which D+H is entitled exceeds the amount of all secured claims by more than 10%, D+H shall release a corresponding part of the security rights at the request of the Buyer.

2. In the event that the Deliveries are sold, the Buyer shall assign to D+H all claims against the purchaser arising from the resale together with all ancillary rights, without the need for any further special declarations. The assignment shall also include any claims for payment of account balance. However, the assignment applies only to the amount that corresponds to the price of the Deliveries invoiced by D+H. Priority shall be given to satisfying the share of the claim assigned to D+H.

3. If the Buyer links the Deliveries to plots of land, the Buyer, without requiring additional special declarations, also assigns the claim that the Buyer is entitled to as compensation for this link in the amount that corresponds to the price of the Deliveries invoiced by D+H.

4. Unless cancelled, the Buyer shall be authorized to collect claims assigned to D+H in accordance with this paragraph IV. (Retention of Title). The Buyer shall immediately forward to D+H payments made on the assigned claims up to the amount of the secured claim. If there is a legitimate interest (such as in the event of any default of payment, suspension of payments, initiation of insolvency proceedings, etc.), D+H is authorized to revoke the Buyer's collection authorization. Furthermore, D+H may, following prior warning and adherence to a reasonable deadline, disclose the assignment for security, make use of the assigned claims, and require the Buyer to disclose the assignment for security to its purchasers. In this case, the Buyer must notify D+H about information required for enforcing its rights with respect to purchasers and issue the required documents.

5. For the duration of the retention of title, the Buyer shall be prohibited from pledging or assigning as security or the Deliveries. The Buyer must immediately notify D+H in the event of seizure, confiscation or other dispositions or interventions by third parties. The resale of Deliveries by resellers is only permitted in the normal course of business and on the condition that the reseller receives payment from its own purchaser in the amount of the equivalent value of the Deliveries or upon including the provision that the property is not transferred to the purchaser until the reseller has fulfilled its payment obligations.

6. If the Buyer breaches its obligations, in particular in the event of default on payment, even without a set deadline, D+H shall be entitled to require the Buyer to surrender the Deliveries and/ or—after setting a deadline, if required—withdraw from the contract. The Buyer is required to surrender the Deliveries. In the event that the Buyer is required to surrender the Deliveries, D+H shall not be required to give notice of cancellation unless expressly stated.

V. Delivery; Delivery Periods; Delays

1. Unless a delivery time has been expressly agreed as binding, any indicated delivery time/delivery period shall be non-binding.

2. Adhering to indicated delivery times requires the timely receipt of all documents, necessary approvals and releases, particularly of plans, to be delivered by the Buyer and requires the Buyer to comply with the agreed payment terms and other obligations. If these requirements are not fulfilled in a timely manner, the delivery periods shall be extended accordingly as appropriate; this does not apply if D+H is responsible for the delay.

3. If failure to comply with delivery times is due to force majeure, e.g. mobilization, war, uprisings, sanctions and embargoes or the like (e.g. strikes, lockouts), the delivery times and periods shall be extended accordingly as appropriate. The same applies if the beforementioned events occur at a D+H supplier.

4. Six weeks after exceeding a non-binding delivery time, the Buyer can ask D+H in writing to deliver within an appropriate time period. Upon receipt of the request, D+H is in default.

5. After a notice of default pursuant to subsection 4., the Buyer is obligated, at the request of D+H, to explain within an appropriate time whether the Buyer wishes to withdraw from the contract due to the delivery delay, request compensation for damages instead of the service or demand the delivery.

6. Any Buyer's claims for damage compensation due to the delay of delivery and claims for damage compensation instead of service are excluded in all cases of delayed delivery, even after a delivery time set by Buyer has expired. This does not apply in cases of mandatory liability due to intentional acts, gross negligence or injuries to life, body or health; and this does not entail any changes to the burden of proof to the disadvantage of the Buyer. The Buyer, within the framework of statutory conditions, may only withdraw from the contract if D+H is responsible for the delivery delay.

7. If, after the notification of readiness for shipment, shipping or delivery is delayed by more than one month at the Buyer's request a storage charge in the amount of 4% of the price of the delivery objects can be charged to the Buyer for each month or partial month; however, this shall not exceed a total of 10%. The contracting parties have the right to provide evidence of higher or lower storage costs.

8. Partial Deliveries are permitted if reasonable for the Buyer.

9. D+H's obligation to deliver in time shall at all times be subject to timely and orderly receipt of the goods from D+H's suppliers. D+H shall inform the Buyer if the delivery is not available and, in the case of cancellation, in case of withdrawal to reimburse the respective consideration to the Buyer without undue delay.

VI. Transfer of Risk

1. The risk, even in the case of a delivery free of charge, shall be borne by the Buyer as follows:

a) For Deliveries without installation or assembly: Once they have been shipped or picked up, but upon leaving the plant/ warehouse at the latest. This applies regardless of whether the goods are shipped from the place of performance or who bears the freight costs. At the request and cost of the Buyer, Deliveries from D+H can be insured against common transportation risks.

b) For Deliveries with installation or assembly: On the day of acceptance at the Buyer's facility or, if so agreed, after a test run free of problems.

2. The risk shall be borne by the Buyer if the shipment, delivery, start or execution of the assembly or installation, acceptance into the Buyer's facility, or test run is delayed for reasons the Buyer is responsible for or if the Buyer is in default of acceptance for any other reason.

VII. Assembly and Installation

The following conditions shall apply for assembly and installation if nothing else has been agreed in writing:

1. The Buyer shall bear the costs for and provide the following in a timely manner:

a) All earthworks, construction works or other extra work by others, including the necessary specialists and auxiliary personnel, construction materials and tools,

b) The commodity goods and materials required for installation and commissioning (such as scaffolding, hoists, and other equipment), energy and water to the place of use, including connections, heat and lighting

c) sufficiently sized, suitable, dry and lockable spaces at the installation location for storing the machine parts, equipment, materials, tools, etc., and appropriate work and break rooms for installation personnel, including suitable sanitary facilities. Apart from this, the Buyer must comply with the measures for protecting property of D+H and installation personnel at the construction site that would be taken if the Buyer were protecting its own property,

d) Protective clothing and equipment that is required due to special circumstances at the installation site.

2. Before beginning installation work and without being prompted, the Buyer must provide D+H and its installation personnel with the necessary information on the location of concealed power, gas and water lines/pipes and any similar installations, and the required structural data.

3. Before beginning assembly or installation, the provisions and objects required for commencing the work must be located at the assembly and installation site, and, prior to beginning of construction, all preliminary work must be sufficiently advanced for the assembly or installation to be started as agreed and carried out without interruption. The access roads and assembly or installation area must be levelled and clear.

4. If assembly, installation or commissioning is delayed for reasons D+H is not responsible for, the Buyer, in an appropriate amount, shall bear the cost for the waiting period and any additional travel required for D+H or installation personnel.

5. The Buyer must issue a receipt to D+H of the duration of the installation personnel's work time each week and immediately notify D+H upon completion of assembly, installation or commissioning.

6. After completion, if D+H requests the acceptance of delivery, the Buyer must provide this within two weeks. If the Buyer fails to do so, the acceptance shall be deemed to have been granted. Acceptance shall also be deemed to have been granted if the delivery has been put into use (if applicable, after completing an agreed test phase).

VIII. Material Defects

1. If the information contained in brochures, advertisements, Internet sites and other quotation documents have not been expressly designated by D+H as binding, the figures or drawings contained therein are only approximate and non-binding.

2. The Buyer's rights regarding liability for defects require that the Buyer properly complies with its duty of inspection and duty to give notice of defects in accordance with para. 377 of the German Commercial Code (HGB). The Buyer must notify D+H immediately in writing for defect claims.

3. Rights regarding liability for defects shall not apply in the case of merely insignificant deviations from the agreed characteristics, in the case of merely an insignificant impairment of usability, in the case of natural wear and tear or damage resulting after the transfer of risk due to faulty or negligent treatment or storage, excessive handling, unsuitable production equipment and facilities, faulty construction work, unsuitable substructure (e.g. windows or walls), or such warranty claims that arise as a result of particular external influences which are not stipulated under the contract, and also in the case of software errors that cannot be reproduced. The Buyer may not refuse the acceptance of Deliveries due to insignificant defects.

4. Likewise, if the Buyer or third parties improperly make changes to, or perform repair work on the shipments, no defect claims may be asserted for these and the resulting consequences.

5. In the event of a material defect, D+H must always first be granted the opportunity to rectify the problem within a reasonable period. The Buyer must make the request for rectification in writing. D+H retains the right to choose between rectification of deficiencies or replacement.

6. If the Buyer fitted the deficient item into another thing or fixed it to another thing in accordance with its nature and use, D+H has the right and freedom to decide to carry out the removal of the deficient item and the fitting or fixing of the improved or replaced item by itself, or to have this done by other persons including the Buyer. In the notice of deficiency of the delivered item, D+H's attention is to be drawn to the fact that the delivered item has already been fitted or fixed.

7. The Buyer shall bear the expenses required for the purposes of rectification, insofar as they increase because the shipments were taken to a location other than the Buyer's branch office, unless this relocation corresponds to their proper use. Notwithstanding further claims from D+H, in the event of an unjustified defect complaint the Buyer must compensate D+H for the expenses for examining and—to the extent requested—eliminating the deficiency.

8. The Buyer shall have right of recourse against D+H only insofar as the Buyer has not reached agreements with his or her customer that go beyond the legally mandatory defect claims. Moreover, the Buyer's right of recourse against D+H is subject to the conditions set out in subsection 6.

9. The Buyer's claims to recourse due to reimbursement of mounting and dismounting expenses, which he has to bear in relation to his customer, shall only apply if the deficiency was in existence during the transfer of risk to the Buyer, if the Buyer complied with his obligation to inspect, notify and reject defects in accordance with section 377 of the German Commercial Ordinance (HGB), and if the Buyer has not made any agreements with his customer extending beyond the mandatory statutory claims relating to defects. The amount of recourse is limited to the total price of the deficient item charged by D+H.

10. If D+H rectifies the shipment, the rectification may be regarded as failed only after an unsuccessful second attempt.

11. If the rectification fails, the Buyer has the right to choose to reduce the purchase price or—if construction work is not the object of the defect liability—cancel the contract. This does not affect the statutory cases for the dispensability of setting a time limit. Also unaffected is the right of the Buyer to demand damage compensation in accordance with the provisions set out here in paragraph XIII.

12. Return shipments of goods shall be accepted only after prior agreement.

IX. Limitation Period

1. The limitation period for claims and rights due to defects in the shipments—regardless of the legal basis—shall be one year. However, this does not apply in the cases described by the German Civil Code (BGB) para. 438 sec. 1 no. 1 (defects in title in the case of immovable objects), para. 438 sec. 1 no. 2 (buildings, items for buildings), or para. 634a sec. 1 no. 2 (buildings or works whose outcome in this connection consists in the provision of planning and supervisory services) Cases exempted in the preceding sentence no. 2 are subject to a limitation period of three years. The contractor's right of recourse in accordance with para. 445a of the German Civil Code is also limited to one year. Paragraph 445 b section 2 of the German Civil Code shall also apply accordingly with the provision that the suspension of expiry shall end latest in three years' time after delivery or acceptance of the goods respectively.

2. The limitation periods according to subsection IX.1 also apply to all claims for damages against D+H that have a direct connection to the defect—regardless of the legal basis of the claim.

3. The limitation periods according to subsection IX.1 and subsection IX.2 apply, however, subject to the following conditions:

a) The limitation periods generally do not apply in the event of intent, or if a defect is fraudulently concealed, or insofar as D+H has provided a guarantee for the quality of the delivery item.

b) In addition, the limitation periods do not apply to claims for damages for a grossly negligent breach of duty, in the event of a culpable violation of significant contractual duties—that does not consist of the shipment of a defective object or the provision of a deficient service, in events of culpably caused loss of life, bodily injury or damage to health or to claims in accordance with the Product Liability Act. The limitation periods for claims for damages also apply to compensation for wasted expenditure.

4. The limitation period for all claims begins with the delivery of goods or, in case of services to be delivered, with the acceptance of services.

5. Unless otherwise expressly stipulated, the statutory provisions governing the beginning of the limitation period, the expiry suspension, the suspension and the restart of periods remain unaffected.

6. The preceding provisions apply accordingly to claims for damages that are not associated with a defect; subsection IX.1 sentence 1 applies to the limitation period.

7. The preceding provisions do not entail any changes to the burden of proof to the disadvantage of the Buyer.

X. Software, Industrial Property Rights and Copyrights; Legal Defects

1. The Buyer has the simple, non-transferable right to use the standard software with the agreed performance features on the agreed devices in unmodified form. The Buyer is permitted to create a backup copy without an express agreement. The Buyer is not granted any further rights (e.g. editing or decompiling).

2. Without qualification D+H reserves its proprietary rights and copyright exploitation rights to cost estimates, drawings and other documents (hereinafter: Documents). The Documents may only be made accessible to third parties after prior approval by D+H and, if D+H is not awarded the order, are to be returned to D+H immediately upon request. Sentences 1 and 2 apply accordingly to Buyer's Documents; however, these are allowed to be made accessible to third parties to whom D+H has transferred shipments with permission.

3. Unless agreement is made otherwise, D+H shall be obligated to make the delivery only in the country of the delivery location, without industrial property rights and copyrights of a third party (hereinafter: Property Rights). Insofar as a third party makes warranted claims against the Buyer because shipments made by D+H and used in accordance with the contract violate property rights, D+H shall be liable to the Buyer within the period stipulated in paragraph IX as follows:

a) D+H shall, at its discretion and at its cost, either obtain usage rights for the shipments in question, modify the shipments so that the property rights are not violated, or exchange the shipments. If D+H is unable to do this with reasonable conditions, the Buyer has the legal right to withdraw from the contract or reduce the purchase price.

b) The duty of D+H to provide damage compensation is governed by paragraph XIII.

c) The obligations of D+H specified above exist only insofar as the Buyer immediately informs D+H in writing about the claims made by the third party, Buyer does not acknowledge a violation, and D+H reserves the right to all counteractions against third party claims and settlement negotiations. If the Buyer stops using the shipment to reduce damage or for other important reasons, Buyer is obligated to notify the third party that such cessation of use does not represent an

acknowledgement of any infringement of property rights.

4. Any claims from the Buyer shall be excluded if Buyer is responsible for the infringement of property rights.

5. Buyer claims are further excluded if the infringement of property rights is caused by the Buyer's special specifications, by an application that D+H could not foresee, or by the shipment being modified by the Buyer, or used in conjunction with products not delivered by D+H.

6. In the event of an infringement of property rights other than these, the provisions of paragraph VIII no. 5 to 9 shall apply accordingly for the Buyer's claims regulated in no. X.3 a).

7. If other legal defects exist, the provisions of paragraph VIII shall apply accordingly.

8. Any further claims or claims other than those expressly regulated in this paragraph X made by the Buyer against D+H and persons D+H employs to perform the contract due to a legal defect are excluded.

XI. Confidentiality

1. The parties agree that they and the respective associated companies shall treat the knowledge they have gained about each other in connection with negotiations and closing contracts with strict confidentiality. This obligation also extends beyond the term of the contract.

2. The parties are not permitted to make business and trade secrets or confidential information accessible to third parties.

3. If the Buyer violates this non-disclosure agreement and continues this violation despite a prior notice from D+H, the Buyer must pay D+H a contractual penalty in the amount of 10,000.00 euros. If the act of infringement continues, the Buyer must pay an additional contractual penalty in the amount of 5,000.00 euros for each additional month of violation. The right of D+H to assert claims for any further damages and to demand cessation of the prohibited behavior shall remain unaffected.

XII. Impossibility; Contract Adaptation

1. D+H shall be liable if shipment is impossible only in cases of willful acting or gross negligence by D+H or a representative or persons employed to perform the contract as well as in events of negligently caused loss of life, body injury or damage to health according to statutory provisions. Notwithstanding, the liability of D+H in cases of gross negligence shall be limited to the foreseeable damage specified in the contract, if none of the other exceptions listed in sentence 1 exist at the same time. Beyond the cases mentioned in sentence 1 and 2, the liability of D+H for damage compensation and compensation for wasted expenditure due to impossibility shall be limited to a total of 10% of the value of the shipment. Any further Buyer claims due to impossibility of shipment are excluded—even after expiration of a time set for D+H for the delivery. The right of the Buyer to withdraw from the contract in accordance with paragraph VIII., no. 11 remains unaffected. The preceding provisions do not entail any changes to the burden of proof to the disadvantage of the Buyer.

2. Insofar as unforeseeable events in the sense of paragraph V, no. 3 substantially change the economic importance or the content of the shipment or have a substantial impact on the operations of D+H, the contract shall be adapted taking into account the principles of reasonableness and good faith. Insofar as this is economically untenable, D+H has the right to withdraw from the contract. If D+H desires to make use of this right to withdraw from the contract, D+H must, after recognizing the repercussions of the event, immediately inform the Buyer, even if an extension of the delivery time was initially agreed with the Buyer.

XIII. Liability

1. D+H shall be liable in cases of willful acting or gross negligence by D+H or a representative or persons employed to perform the contract as well as in events of culpably caused loss of life, bodily injury or damage to health according to statutory provisions. Notwithstanding, the liability of D+H in cases of gross negligence shall be limited to the foreseeable damage specified in the contract, insofar as no other exceptions than those listed in sentences 1 or 3 of this no. XIII exist at the same time. Apart from that, D+H is liable only in accordance with the Product Liability Act (Produkthaftungsgesetz), due to the culpable violation of fundamental contractual obligations or insofar as D+H has fraudulently concealed a defect or provided a guarantee for the quality of the delivery item. However, the claim for damages for violation of material contractual obligations shall be limited to the foreseeable damages specified in the contract, if no other exceptions than those listed in sentences 1 or 3 of this no. XIII.1 exist at the same time.

2. The provisions from the preceding no. XIII.1 apply to all claims for damages (particularly for damage compensation in addition to the service and damage compensation instead of the service), regardless of the legal basis, particularly due to defects, violation of obligations of the contract or from unlawful acts. They also apply to the claim for compensation of wasted expenditure. However, liability for delay is determined by paragraph V. numbers 4 to 7 and liability for impossibility by paragraph XII., no. 1.

XIV. Place of Performance, Jurisdiction and Applicable Law

1. The place of performance for shipments and payments is the registered office of D+H.

2. If the Buyer is a merchant, the sole place of jurisdiction for all disputes indirectly or directly proceeding from the contractual relationship is the registered office of D+H. However, D+H is also authorized to sue at the registered office of the Buyer.

3. The legal relationships in connection with this contract are governed by German law to the exclusion of the United Nations Convention on Contracts for the International Sale of Goods (CISG).

1. Modifications to this contract must be in writing to be effective. This also applies to modification of this requirement of written form.

2. The ineffectiveness of individual provisions in this contract shall not affect the effectiveness of the remaining provisions. In this case, the parties undertake to agree upon effective provisions that come closest to the intended purpose of the ineffective provisions in economic terms. This applies accordingly to the closing of any gaps in this contract. Only the German version of this General Terms and Conditions are legally binding while the English version only serves for the purpose of translation. In case of discrepancies of the contents the German version prevails.

(Status January 2018)

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HS “High speed”

In the case of SHEV, the high-speed function is used for reliably reaching the defined end position in 60 s. In daily ventilation mode, the drive runs quietly and quickly, as usual.

Function programming

Option for customised configuring of drive parameters (e.g. stroke) via software and associated service tools for drives equipped with PLP, BSY or BSY+ electronics.

BRV signal

Acknowledgement from the drive, via a control cable, to confirm that it has been completely extended or retracted. When used with the AT 41 and ERM 44 modules, this signal is sent to the central building control system, the modules themselves, or to the locking drive. The BRV signal is not isolated.

ACB (Advanced Communication Bus)

Enables direct bus communication between the controller and the drive for, for example, control with perfect positioning or drive feedback. Communication is via the open source Modbus protocol, and it enables the drive to be combined with an ACB-capable control panel or enables it to be directly connected to higher-level controllers such as a building management system.

BSY+ (synchronisation of drives)

In addition to providing the same synchronisation function as BSY, BSY+ enables different components in the window to communicate with each other. For example, the chain drives, during synchronous operation, or the window and locking drives (e.g. FRA 11 BSY+ or VLD-BSY+).

SGI signal (position reporting)

In combination with the D+H servo plug-in unit SE 622 or the BSY-gateway BSY-GW-024-010-U, the drives can be controlled with perfect positioning.

SKS (closing edge protection)

Drive option, which enables an anti-trap strip or presence detector to be connected directly to the drive (terminal resistor 5.6 kΩ).

Audible signal (corresponding to protection class)

AS2 corresponding to “Protection class 2” in accordance with ZVEI risk assessment through an audible warning signal in the “CLOSED” running direction. AS3 corresponding to “Protection class 3” in accordance with ZVEI risk assessment, in addition to AS2, stops the drive for 11 s with a remaining stroke of 28 mm.

End position message (OPEN / CLOSED)

Drive feedback via an integrated isolated switching contact. This happens if the chain / rack and pinion has moved completely out or in.

TM tandem connecting shaft

Available as an option for rack and pinion drives. The drives are mechanically coupled with the rack and pinion slave units (ZM) with connecting shafts (VW).

SBD side bow chain

Drive chain with rigid backing, bends in the direction of the hinge. Drive is fixed in place (not rotatable).

SBU side bow chain

Drive chain with rigid backing, bends in the direction of the hinge. Drive is fixed in place (not rotatable).

WS (use in swimming pool)

Available as an option for rack and pinion drives to make them suitable for use in swimming pools. The drive is equipped with an A4 rack and pinion, A4 eyebolt and a gearbox with hardened stainless steel pinion.

W (use outdoors)

Available as an option for rack and pinion drives to make them suitable for outdoor use. The drive is equipped with a pressure release vent (depending on installation), condensation protective coating on the electronics and a gearbox with hardened stainless steel pinion.

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