

Façade Automation Guide

Creating a healthier and safer environment

CONTENTS

- 02 - 05 Introduction
- 08 - 13 Technical Guidance
- 14 - 15 Manual Winding Gear
- 16 - 28 Chain Actuators
- 29 - 38 Linear Actuators
- 39 - 44 Application Products
- 45 - 53 Control Systems
- 44 - 55 Glossary of Terms
- 56 - 57 Projects
- 58 - 59 Services & Contact details

Global interests

Offices in the UK, Hong Kong, China, India, Middle East, South Africa and Brazil





Who we are & what we offer

SE Controls are a specialist contractor providing a complete solution for both smoke ventilation and adaptive natural ventilation solutions, via façade and building envelope automation in several continents.

With over 30 years experience within the façade automation industry, SE Controls offer complete turnkey solutions from design and manufacture to installation, commissioning and on-going maintenance, throughout the life time of the building.

Uniquely, SE Controls are members of both FETA (The Smoke Control Association) and the CIBSE Natural Ventilation Committee, which means our customers can benefit from qualified advice and technical support that is relevant to current standards and design guides for both smoke and natural ventilation.

Our products and systems are incorporated into all sectors of the construction industry both new build and refurbishment projects.

The SE Controls product range is designed, manufactured and rigorously tested in the UK to meet all required European standards. Continual reinvestment into the infrastructure and product development has kept SE Controls at the forefront of the industry.



SE Controls' Core Competencies

SE Controls offer a complete turn-key solution from design, through to post installation maintenance, via the provision of 8 core competencies.

The service is flexible, in order to deliver an efficient solution for each customer's individual requirements.

BELOW East Park Design School - Loughborough University

LOCATION: LOUGHBOROUGH

ARCHITECTS: NICHOLAS BURWELL

CONSULTANTS: HOARE LEA

MAIN CONTRACTORS: SHEPHERD CONSTRUCTION

TGLA 24 65 LINEAR ACTUATORS INSTALLED TO ATRIUM VENTS,
BMS INTERFACE VIA OS2 TYPE 24 CONTROLLER



DESIGN

Early consultation with an experienced façade automation specialist has been proven to be both technically and commercially advantageous. Correct product selection to meet current standards and project specification can be assured, due to SE Controls experience and membership of all industry related trade associations backed by our professional indemnity cover.

SE Controls can provide the additional services:

- In house CAD project team for both approval and fabrication
- Free area calculations
- Applicable regulation advice
- Product selection to meet project requirements
- Specification clauses
- Project and commercial requirements
- Project coordination
- If required CFD and thermal modelling

This service can satisfy your responsibility as a specialist envelope contractor.



INSTALLATION

With a varied range of automation products, partnered with the vast array of window systems and materials available within the industry, the need for qualified and experienced engineers is more important now than ever.

In our experience, 90% of product failure can be attributed to incorrect installation and product selection.

SE Controls have a national network of over forty engineers all of which have been trained via our installation academy.

They are familiar with window system componentry and all hold CSCS certification.



MANUFACTURE

Our philosophy is to design, test and manufacture products tailored to suit both the legal and technical requirements of the industry. Efficiently sustainability aesthetics and cost to market are key drivers in addition to ease of use and maintenance thereafter.

Pushing the boundaries of current technology and regulations keeps our product at the forefront of the industry and we remain uniquely placed as the only UK manufacturer of both window automation products and control systems. This is facilitated via our in house New Product Development Team, working in conjunction with our commercial team to ensure we produce what the market demands.

Our products are designed with flexibility in mind to interface with all common façade systems and building automation control systems and protocols.



DISTRIBUTION

Stock levels are, of course, vital to offer a proactive and reliable service to a demanding market.

To do this SE Controls have invested in a 21,000 square foot manufacturing and distribution facility on their site at their centrally based headquarters in Staffordshire.

In addition to large stock levels, we have the ability to tailor products quickly (cable lengths finish, stroke lengths, bracketary). Warranties are assured as our suppliers have vetted and authorised our procedures in addition to producing our own portfolio products.

This level of service to the façade industry is unique.



PROJECT MANAGEMENT

Our internal Technical Sales Teams and nationally located Project Leaders are "geared" to provide our core competencies both on and off site.

Coordination, compatibility and demarcation between associated trades is vital to ensure the correct provision of a system.

CAD Design Service

A comprehensive CAD service is available to ensure compatibility with your profiles.

SE Controls have associations with all leading systems houses and can provide details for approval and fabrication. All products can be downloaded from www.secontrols.com.



COMMISSIONING

Commissioning of control systems and sign off is a vital part of handing over a smoke or natural ventilation system. The ability to react on site quickly at a time when all associated trades are commissioning towards the end of the construction phase is essential.

All SE Controls engineers are trained in the commissioning of our control systems and also work closely with both our Technical Support and Project Management Teams.

Each commissioning engineer is electrically qualified and holds current CSCS certification.



MAINTENANCE

Maintenance is a key requirement to ensure the sustainability of an automated façade or smoke ventilation solution. The life expectancy of the products is vastly increased when preventative maintenance is scheduled and performed. Recent changes in legislation (Regulatory Reform Order) have squarely placed the provision of providing fire safety systems onto the building owner. After commissioning is complete, regular maintenance of the system ensures this obligation is met.

Natural ventilation solutions also require maintenance that often includes post occupancy data to give valuable feedback to the client on the effectiveness of the system. This information allows the client to make potential system alterations.

SE Controls Maintenance Division operates on a national basis offering 24 hour response to its clients.



TRAINING

Training forms the backbone of the structure at SE Controls. The internal academy provides courses on all operational and product topics, in addition to 30 years industry experience.

As a pioneer within our industry SE Controls also offer accredited CPDs on window automation, natural ventilation, and smoke ventilation.

This training is available to all of our clients and has been produced from our knowledge gained uniquely as members of both UK smoke and natural ventilation working groups.

Principles of Smoke Ventilation

Residential Smoke Ventilation.

Smoke ventilation via window automation is predominantly utilised in high occupancy dwellings, that are both private and social, e.g. student accommodation, hotels, apartments etc.

Such buildings are governed by regulation Approved Doc B design guide BS9991 and product standard EN12101-2.

Automated smoke vents generally fall into two product groups namely staircase AOVs and end of corridor AOVs.

Staircase AOVs are required to provide either 1.0 or 1.5 sq/m of free area dependant upon the stair type (escape or fire fighting). End of corridor AOVs are required to provide 1.5 sq/m of free area on each level to provide a safe escape route to the stairs. See page 10 for free area calculations.

Both options require 24v DC actuators which enables a battery backed control system to automate the system if mains power failure is lost.

Due to free area calculation methods, it is common to see a double stacked bottom hung open out or large side hung solution for corridor AOVs.



ABOVE Orion Apartments, Navigation St
LOCATION: BIRMINGHAM
ARCHITECTS: BBLB & JOHN ROCHA
CONSULTANTS: HOARE LEA
MAIN CONTRACTORS: TAYLOR WOODROW
SECO 24 40 ACTUATORS INSTALLED TO BOTTOM HUNG VENTS AS PART OF COMPLETE SMOKE VENT SYSTEM



ABOVE Picture of EN12101-2 AOV in a fire test (Annex G)

Non Residential Ventilation Smoke Ventilation.

Smoke ventilation via window automation in non residential applications such as commercial health and retail sectors utilise both vertical and inclined automated solutions.

Such buildings are governed by BS9999 and product standard EN12101-2.

Unlike the prescriptive free areas required for residential smoke ventilation, the size and design of the building will govern the vent type orientation free area requirements and method of area measurement.

Positive and negative loads such as snow wind pressure etc need to be factored when selecting products.

Check with SE Controls Technical Advisors to ensure your offer meets the required regulations. Ensure your company is covered.



TOP LEFT Salford Royal Hospital

LOCATION: MANCHESTER
ARCHITECTS: HKS
CONSULTANTS: SAFE
MAIN CONTRACTORS: BALFOUR BEATTY
EN12101-2 TESTED GLAZED LOUVRES
FOR AIR INTAKE AT ENTRANCE

TOP RIGHT London School of Economics

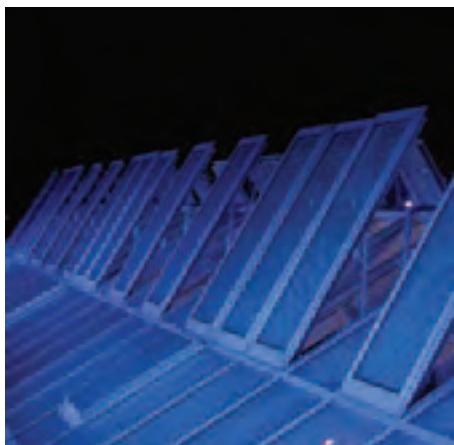
LOCATION: LONDON
ARCHITECTS: FOSTER + PARTNERS
CONSULTANTS: FABER MAUNSELL
MAIN CONTRACTORS: BALFOUR BEATTY
SMOKE VENTILATION VIA OPPOSING
AUTOMATED TRIANGULAR VENTS

BOTTOM LEFT Fulham Broadway

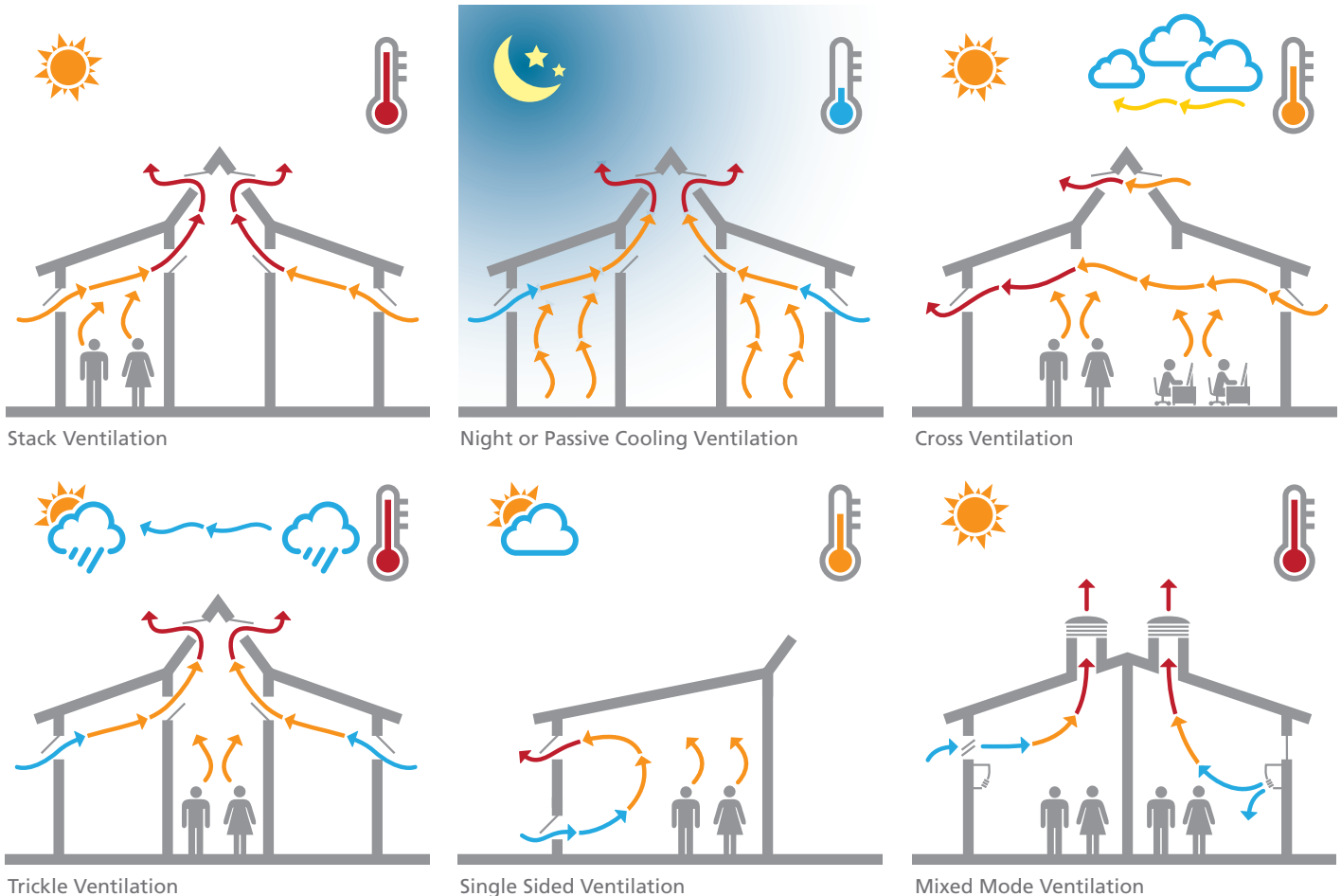
LOCATION: LONDON
ARCHITECTS: HAMILTONS
MAIN CONTRACTORS: SIR ROBERT MCALPINE
SLOPING EN 12101 TESTED SMOKE VENTS
FOR ATRIUM SMOKE EXTRACT APPLICATION
WITH SELA P LINEAR ACTUATORS INSTALLED

BOTTOM RIGHT Walsall Manor Hospital

LOCATION: WALSALL
ARCHITECTS: STEFFIAN BRADLEY ASSOCIATES
MAIN CONTRACTORS: SKANSKA
TGCO 24 700 INSTALLED TO TOP HUNG
OPEN OUT VENTS FOR AIR INTAKE



Principles of Natural Ventilation



The automation of windows to provide suitable indoor air quality (IAQ) within room spaces is a common and cost effective solution to meet regulation Approved Doc F and design guides BB101 for schools and CIBSE guides A,B and AM10.

Automating vents for night purging and cooling thermal mass has proven to be an extremely effective strategy to provide improved thermal comfort and energy saving in lieu of mechanical HVAC systems.

The use of natural ventilation in design is now commonly utilised to gain BREEAM credits to attain the desired building performance.



ABOVE Robert Gordon University

LOCATION: ABERDEEN

ARCHITECTS: BUILDING DESIGN PARTNERSHIP

CONSULTANTS: KJ TAIT

MAIN CONTRACTORS: MILLER CONSTRUCTION

SECO 24 40 ACTUATORS INSTALLED TO TOP
 HUNG VERTICAL VENTS FOR AIR INTAKE
 & TO NORTH LIGHTS FOR AIR EXTRACT

RIGHT Hackney Academy

LOCATION: HACKNEY

ARCHITECTS: STUDIO E

CONSULTANTS: MAX FORDHAM

MAIN CONTRACTORS: WILLMOTT DIXON

CHAIN ACTUATORS INSTALLED
 TO TOP HUNG VENTS



Free area calculations

There are generally four methods to measure free area through a window which are all applied relative to the building type and the application (smoke or natural ventilation).

In all applications be aware of obstructions such as framework recesses side walls etc., and of course neighbouring vents.

GEOMETRIC FREE AREA

The physical area produced by opening the window $A + B$. This area cannot exceed the maximum geometric area of the vent $a \times b$.

AERODYNAMIC FREE AREA ($A_v C_v$)

Mainly used for smoke ventilation the internal throat area $a \times b$ (A_v) multiplied by the efficiency factor or coefficient of discharge (C_v) of the vent which is determined by the opening angle.

This information is only available if an aerodynamic test is carried out.

Generally 30-60% efficiency factors are achieved dependent upon the opening angle.

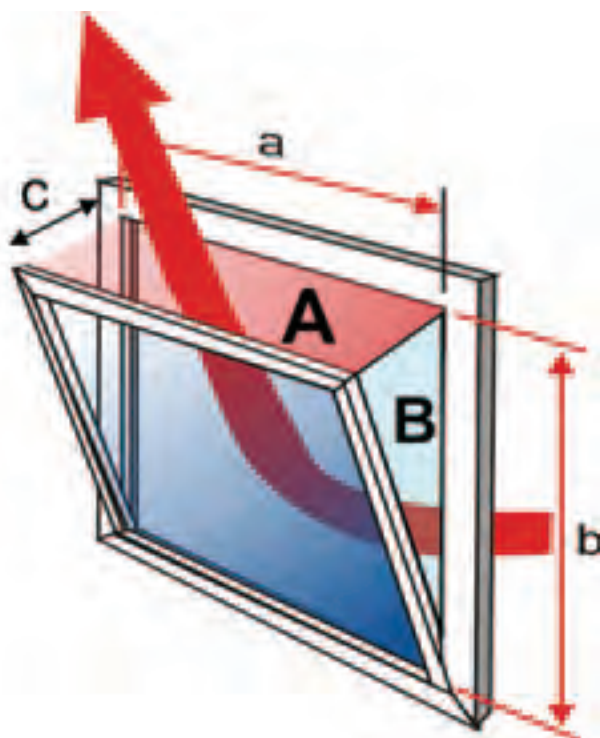
EFFECTIVE AREA

Similar to aerodynamic area, this is the effectiveness of the vent rather than physical geometric area but this method is more often used for natural ventilation applications. Approved Doc F for example requests 'effective area'.

CIBSE guides have a calculation method for effective area.

DIRECTION OF SMOKE FLOW

Residential smoke ventilation free area calculations are either measured geometrically in the direction of smoke flow or aerodynamically. This is either by multiplying $a \times b$ x the coefficient of discharge or $a \times c$, as shown by the arrow on the diagram.

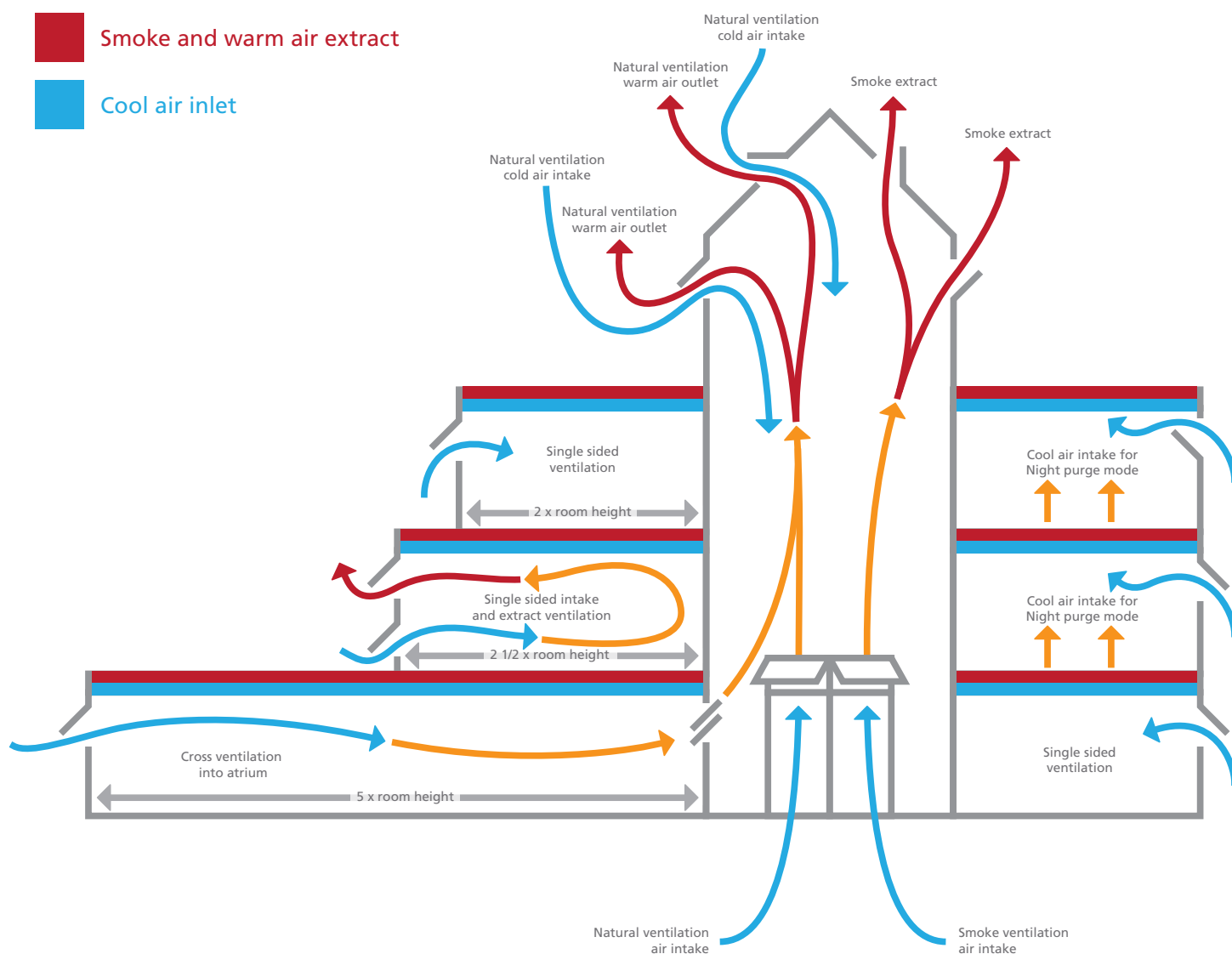


PLEASE CONSULT SE CONTROLS' TECHNICAL SUPPORT TEAM WHO WILL ASSIST YOU IN PREPARING FREE AREA CALCULATIONS RELATIVE TO YOUR APPLICATION.

General principles of airflow

The direction of airflow or smoke flow is an important factor when selecting a suitable vent type.

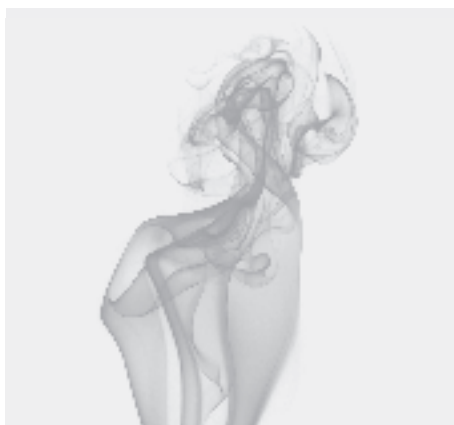
Basic principles of airflow relative to external and internal temperatures and pressures will determine the optimum solution. The direction of airflow or smoke flow is an important factor when selecting a suitable vent type as certain hinge arrangements are more suited to air intake and smoke extract.



Consult SE Controls' Technical Support Team who will assist you to select the most appropriate vent orientation.

Actuator selection criteria

The following 12 criteria are an indication of the types of information you may need to consider when choosing the correct actuator for your application.



SMOKE OR NATURAL VENTILATION?

This will govern what regulations product and certification will apply to the selection.

CHAIN OR LINEAR ACTUATOR?

In general, chain drives tend to be used for vertical vents as they do not protrude within the room space, plus they can easily be powder coated to match the frames or concealed within the section.

There are specific chain drives that are suitable for sloping vents which are very strong and have double strength chains (TGCO 24 50, 60 & 70 range)

Linear drives tend to be used for inclined vent applications or extremely large vertical windows due to the increased forces available. It is possible to automate vents up to 500KG with linear drives.

ACTUATOR SIZE/AESTHETICS

There is a huge variation in actuator sizes available but generally the size tends to increase proportionally with the stroke and opening force.

Concealed actuators are possible but careful consideration must be made to maintain weathering and strength if sections require routing to accommodate the actuator.

FLEX LENGTH AND SPEC

Standard flexes tend to be between one and three metres however extended flexes are possible up to a maximum of ten metres for DC actuators (due to volt drop)

If cables are run on or within the glazing system we recommend 24v DC actuators for electrical safety compared to running 230v AC within a glazing system which is onerous to the fabricator.

Smoke ventilation actuators are fitted with a high temperature silicone LSF flex for connection locally to the fire rated field wiring.

FORCE (N)

Actuators are measured in Newtons (9.81N = 1kg)

Traditional force calculations for windows are based on butt hinges but many windows now utilise friction hinges which require greater force to close them especially when opened to the maximum permissible angle as they lock out. The window also needs to be pulled up for the last ten degrees as they initially drop when they open on the stays.

External elements such as snow load and wind load need to be factored into the force calculation.

It is common for chain drives to lose force over their opening distance especially larger stroke actuators, so ensure sufficient force is provided throughout the stroke. The further the vent opens, the harder it becomes to push but the weaker the actuator becomes so be careful.

Product failure will often result relatively quickly if an undersized actuator is selected

LOCKING POINTS

As most façade specifications are requesting high weather performance and vents are increasing in size the need for multiple locking points on the vent is more prevalent.

Whilst generally, leading edge widths above 1200mm tend to require multiple locking points every system has it's own criteria. Height is also a factor and automated multi point locking solutions are now commonplace.

Generally the number of actuators (locking points) will mirror the test data for handles of the system company.



FINISH

Most actuators have a standard finish grey or white powder coating or silver anodized.

Alternative finishes are available but usually cost a premium and increase delivery time.

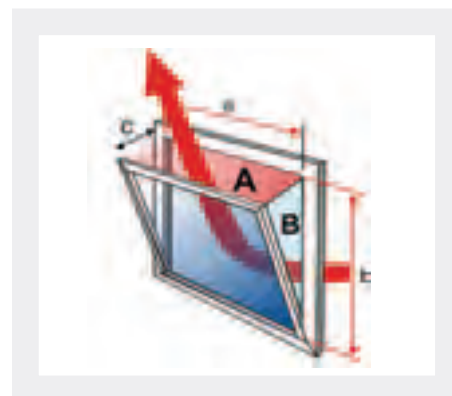
VOLTAGE

Most actuators are available in both 24v DC and 230v AC versions.

Smoke ventilation predominantly utilises 24v DC that will operate via a battery back up providing a secondary power supply.

Natural ventilation uses both voltages although 24v actuators tend to be more cost effective and offer increased functionality (tandem drive, multi point locking, programmable speed and force etc).

It is important for a fabricator to ensure electrical safety of the system especially if extended flexes or cabling within the sections is requested. A 24v solution is recommended in this instance as it is electrically safe whereas 230v is not therefore requiring additional safety measures.



FREE AREA/OPENING STROKE

As mentioned in the free area section of the catalogue. The free area requirement will govern the actuator selection and voltage.

HINGE TYPE

The hinge type and relative path of the vent when opening is extremely important.

Butt hinges provide a consistent opening path and weight to calculate the actuator type required. However, friction hinges produce an entirely different opening path and often the vent will drop initially.

It is also common for friction hinged vents to lock close to the maximum opening distance resulting in the need for extremely strong actuators to close them again.

Actuators that are fixed to the frame with a solid bracket will require pivot brackets when the radius of opening is too tight for the flexibility of the chain.

VENT POSITION

EN 60335-2 requires automated vents below 2.5m from FFL to be risk assessed.

The nature of the building and control strategy can negate the need for safety devices within the actuators or from separate devices such as infrared beams.

Programmable features such as speed and closing force can be provided but this does not necessarily reduce the risk especially if the side of the vent is within the risk area due to the scissor effect.

SE Controls will assess the risk on your behalf.

SPEED

Smoke ventilators need to fully open within 60 seconds in accordance with EN12101-2.

Chain actuator speed is important for accurate positioning in natural ventilation applications plus slower speeds provide greater protection against potential finger trap application.

WARRANTY

Most actuators have a 10,000 cycle warranty with SE Controls offering 15,000 for the SECO N range however it is important that this is independently monitored by the control system so the fabricator can back up the warranty.

The SE Controls range of controllers offers this facility.

Manual winding gear

For high level or out of reach windows, we have a range of manual winding gear solutions that can be applied to single or multiple vents to provide smoke or natural ventilation.

Vertical windows predominantly utilise single or double chain drives which have an opening stroke of 250mm or 380mm.

Sloping vents will require a linear screwjack with an opening stroke of 380mm.

White is the most common finish, but grey, brown and black are also available.



RIGHT Midi Control Handles

APPLICATION SHOT SHOWS MIDI CONTROL HANDLE AND CHAIN OPENER INSTALLED TO TOP HUNG VENTS

MIDDLE Chain Opener

APPLICATION SHOT SHOWS MIDI CONTROL HANDLE AND CHAIN OPENER INSTALLED TO TOP HUNG VENTS

FAR RIGHT Screwjack

APPLICATION SHOT SHOWS OPERATIONAL SCREWJACK IN PLACE





PRODUCT SECTION

Chain Actuators

Chain actuators provide the most common and cost effective solution for window automation. They are usually surface mounted, but concealed solutions can also be offered.

Actuators are available in a range of stroke lengths from 100mm-1000mm and with multi point locking abilities in order to meet weather and security performance requirements.

Whilst chain actuators are predominantly used on vertical applications, stronger products with robust chains are also capable of operating sloping vents.



CHAIN ACTUATOR

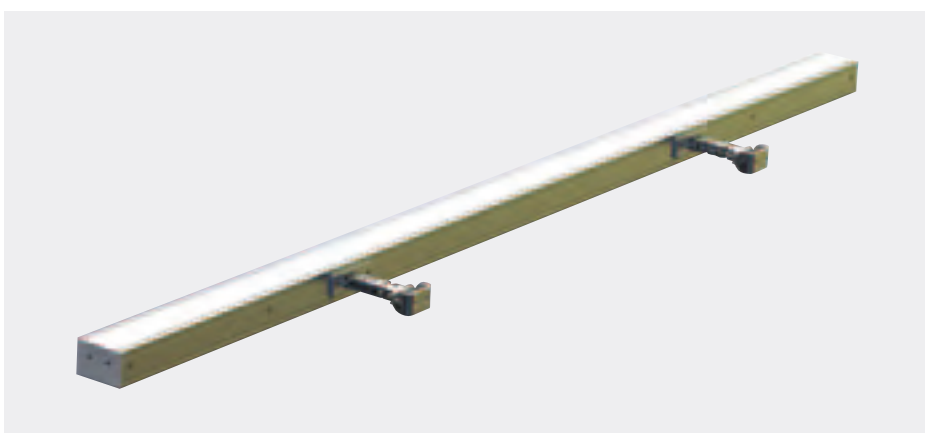
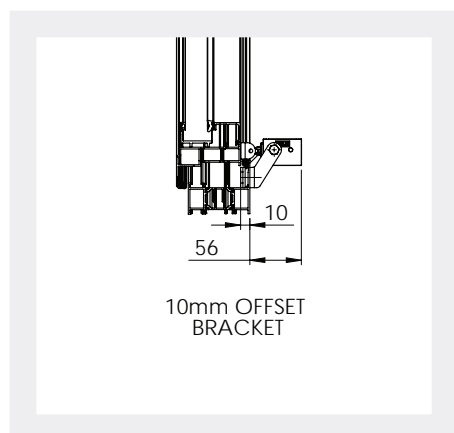
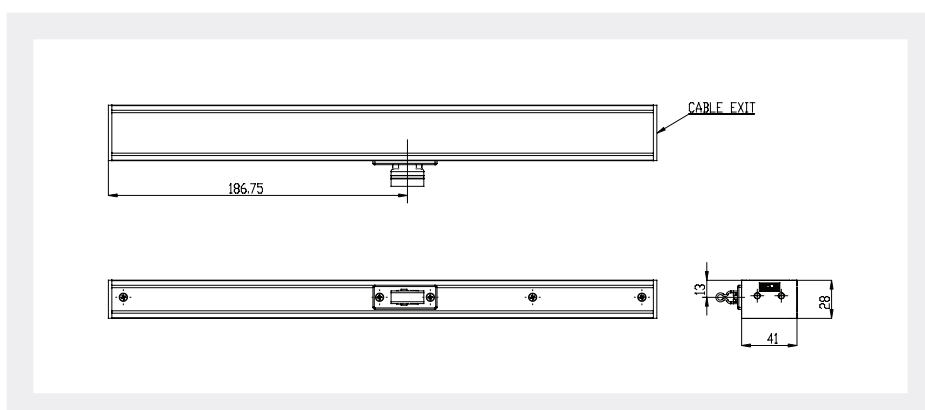
SECO N 24 25 RANGE

The SECO 24 25 chain actuator range is a high quality but cost effective chain drive designed and manufactured by SE Controls and tested to EN 61000-6-1 & 2

Both single and twin versions are available in standard or bespoke body lengths in addition to stroke finish and flex length/type variations.

Concealed details are available for certain vent types.

- Voltage – 24v DC and 230v AC
- Force – 250N (twin 2x250N)
- Stroke range – 100-350mm (bespoke strokes available)
- Standard Finish – RAL 9006 (silver grey)
- Distinctive grooved enclosure and branded end cap
- Flexible bracket range to suit all vent applications (0, 5, 10mm)
- Slim enclosure
- Single and twin applications
- Warranty – 2 years/15,000 cycles
- BMS simulation tested to 500,000 cycles
- Intelligent variants to follow
- Optional volt free signal output
- CE certified



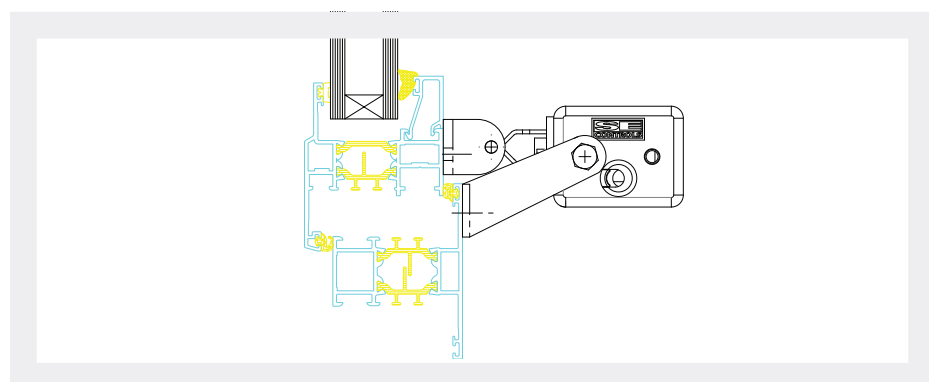
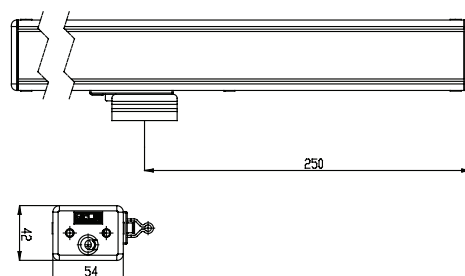
CHAIN ACTUATOR

SECO N 24 40 RANGE

The SECO 24 40 chain actuator range is a high quality but cost effective chain drive designed and manufactured by SE Controls and tested to EN 61000-6-1 & 2 and EN12101-2 smoke regulations.

Both single and twin versions are available in standard or bespoke body lengths in addition to stroke finish and flex length/type variations.

- Voltage – 24v DC and 230v AC
- Force – 400N (up to 600mm stroke)
- Stroke range – 100-900mm
- Standard Finish - RAL 9006
- Distinctive grooved enclosure and branded end cap
- Flexible bracket range to suit all vent applications
- Single and twin applications
- Warranty – 2 years/15,000 cycles
- BMS simulation tested to 500,000 cycles
- Intelligent variants to follow
- Optional volt free signal output
- CE certified



SUITABLE FOR:

Natural Ventilation



Smoke Ventilation



Download data sheets and CAD files from our product catalogue at www.secontrols.com

CHAIN ACTUATOR

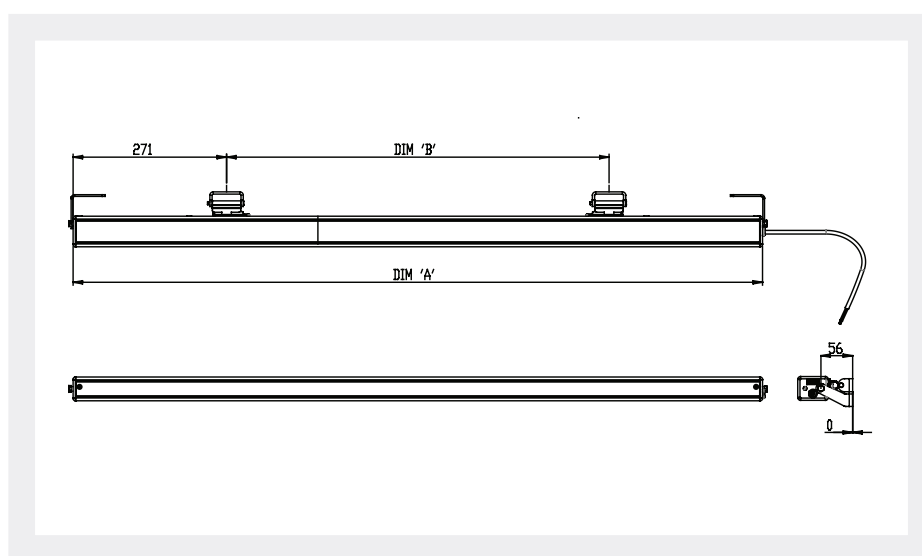
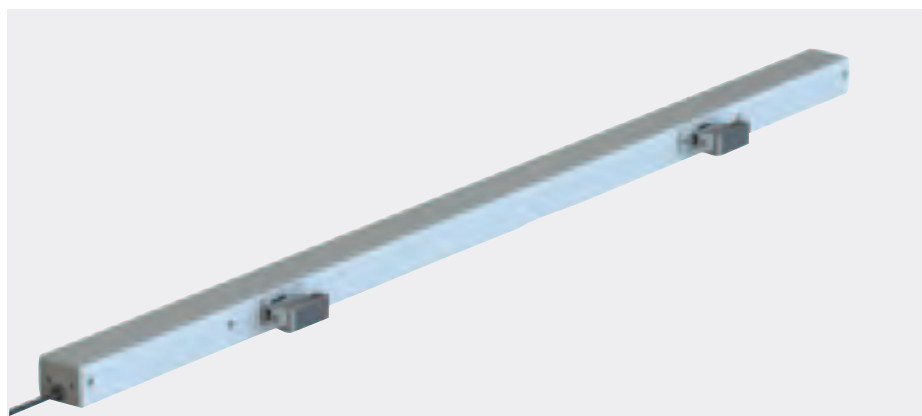
TWIN SECO N 24 40

The Twin SECO N 24 40 window actuator is a European certified and compliant developed chain actuator, designed to provide precise and reliable operations for natural ventilation applications, with two synchronised drive mechanisms integrated into one extrusion.

The Twin SECO N 24 40 provides actuation of particularly wide windows for a robust and efficient installation. The closing of the actuator is electronically switched to ensure a tight and secure closing compression on every operation.

Tailored body lengths, finishes and bespoke flex lengths are available to optimise the locking point positions for improved weather tightness.

- Voltage – 24v DC
- Force – 2 x 400N (up to 600mm stroke)
- Stroke range – 250 – 900mm
- Standard Finish - RAL 9006
- Distinctive grooved enclosure and branded end cap
- Flexible bracket range to suit all vent applications
- Warranty – 2 years/15,000 cycles
- BMS simulation tested to 500,000 cycles



Description	Dim 'A'	Dim 'B'
1450 VENT (UP TO 400mm STROKE)	1267.5	725
1350 VENT (UP TO 400mm STROKE)	1217.5	675
MINIMUM LENGTH 250mm STROKE	927.5	385
MINIMUM LENGTH 400mm STROKE	1077.5	535
MINIMUM LENGTH 600mm STROKE	1277.5	735
2100 VENT (UP TO 900MM STROKE)	1592.5	1050

CHAIN ACTUATOR

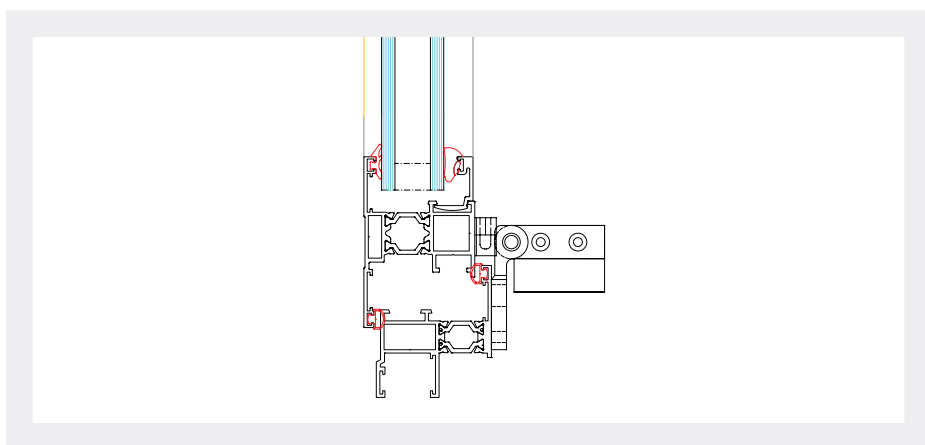
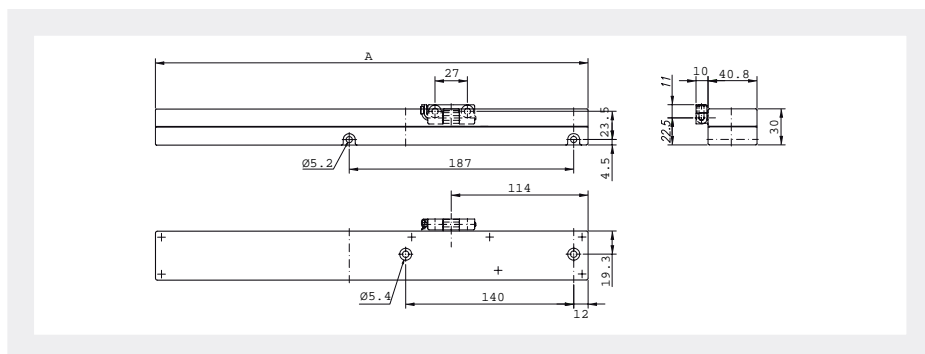
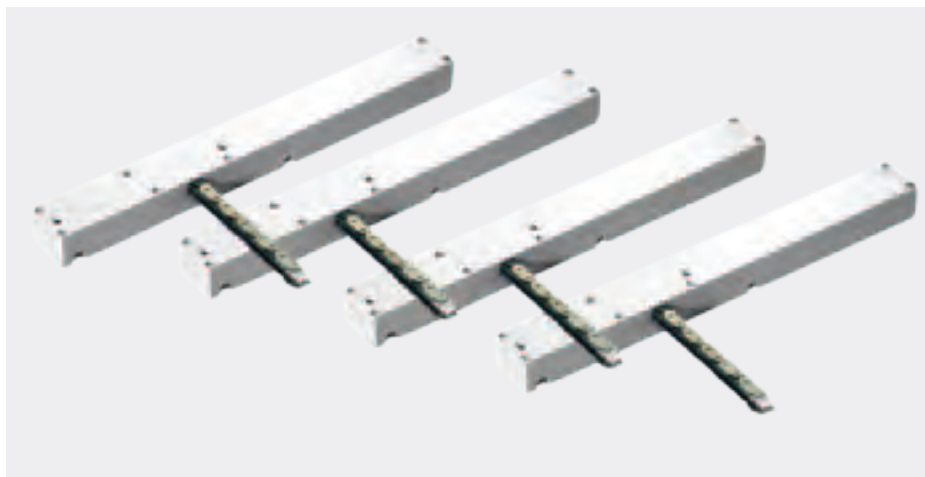
TGCO 24 20 RANGE

The TGCO range of actuators offers the widest range of features in terms of stroke lengths intelligence and flexibility.

The slim enclosure has the following features :

- Voltage – 24v DC and 230v AC
- Standard finish – RAL9006 & 9016
- Force – 200N (up to 350mm stroke)
- Stroke range – 120-500mm
- Single and Tandem versions available
- Multiple brackets plus through body fixing.
- Slim enclosure for both surface and concealed applications
- Multipoint locking options
- Tripe and quadruple applications available (TGCO 24 20 ED)
- Programmable speed and closing forces (ED version)
- Warranty – 2 years/10,000 cycles
- CE certified

The 230v single and tandem version are not programmable.



SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



Download data sheets and CAD files from our product catalogue at www.secontrols.com

The TGC0 range of actuators offers the widest range of features in terms of stroke lengths, intelligence and flexibility.

Range summary

TGCO 24 15	Single 24v DC	120 – 350mm stroke
TGCO 24 20	Single 24v DC	120 – 500mm stroke
TGCO 24 20	Tandem 24v DC	120 – 500mm stroke
TGCO 20	Single 240v AC	120 – 500mm stroke
TGCO 20	Tandem 240v AC	120 – 500mm stroke
TGCO 24 20 ED	Single 24v DC	120 – 500mm stroke programmable
	Tandem 24v DC	120 – 500mm stroke programmable
	Triple 24v DC	120 – 500mm stroke programmable
	Quad 24v DC	120 – 500mm stroke programmable



SUITABLE FOR:

Natural Ventilation

Smoke Ventilation

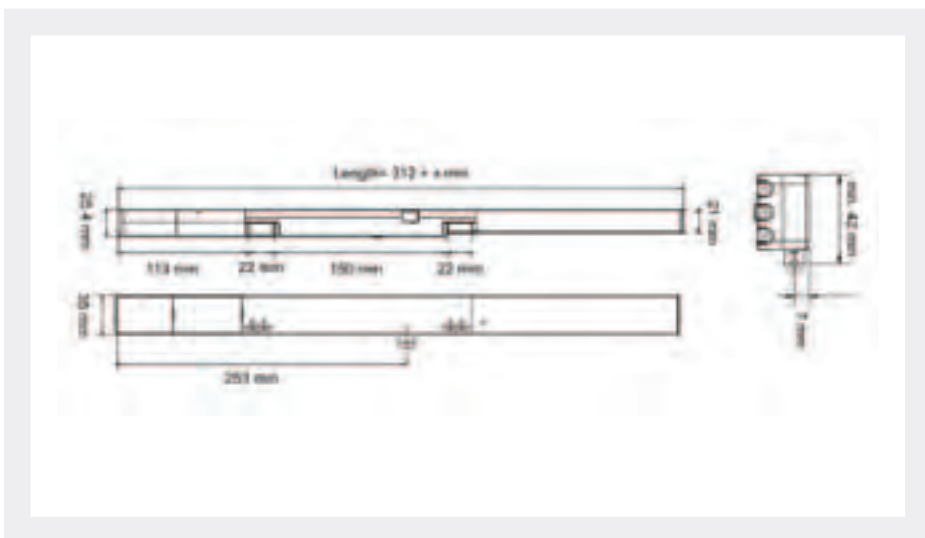
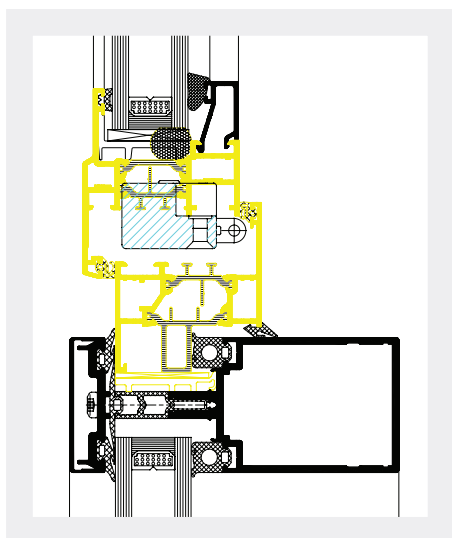


CHAIN ACTUATOR

TGCO 24 30 PI

Profile integrated actuator
for concealing only with
the following features :

- Voltage – 24v DC
- Force – 300N
- Stroke – 100-800mm
- Single tandem and multi point locking motor options
- Warranty – 2 years/10,000 cycles
- CE certified



Download data sheets and CAD files from our product catalogue at www.secontrols.com

SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



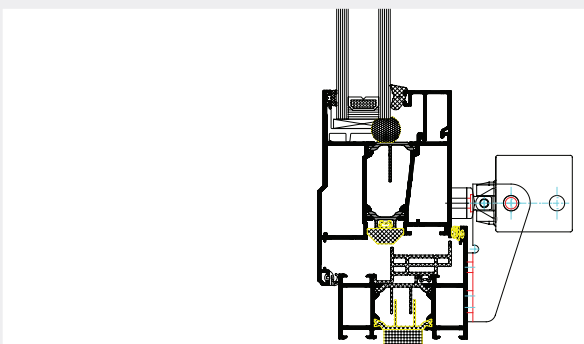
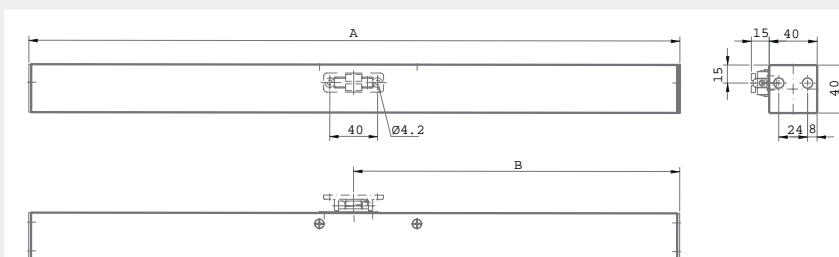
CHAIN ACTUATOR

TGCO 24 30 RANGE

Slim enclosure with the following features :

- Voltage – 24v DC and 230v AC
- Standard finish – RAL9006 & 9016
- Force – 300N (up to 600mm stroke)
- Stroke range – 327-1000mm
- Single and Tandem versions available
- Multiple bracket detail
- Slim enclosure for both surface and concealed applications
- Triple and quadruple applications available (TGCO 24 30 ED)
- Programmable speed and closing forces (ED version)
- Warranty – 2 years/10,000 cycles
- CE certified

The 230v single and tandem versions available but they are not programmable. A concealed option is available in both voltages.



SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



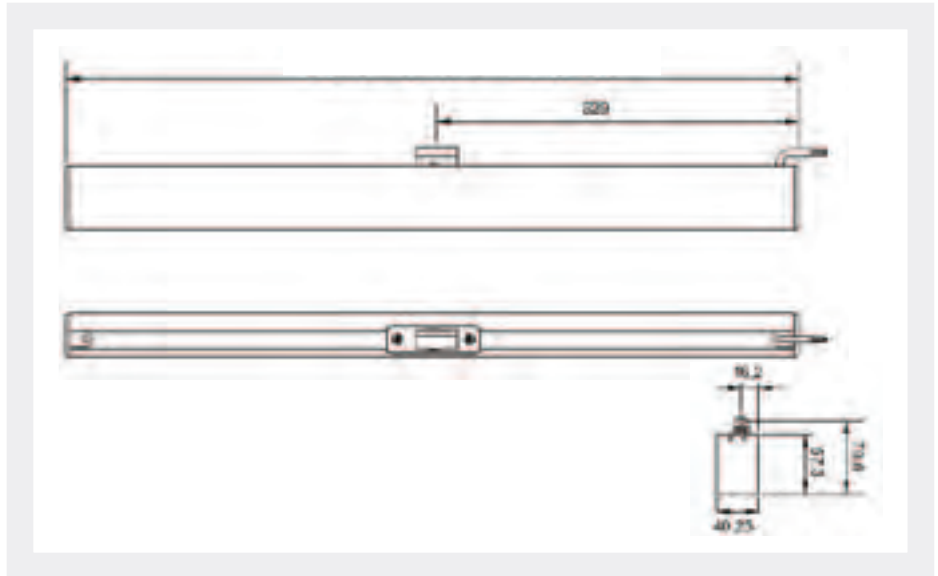
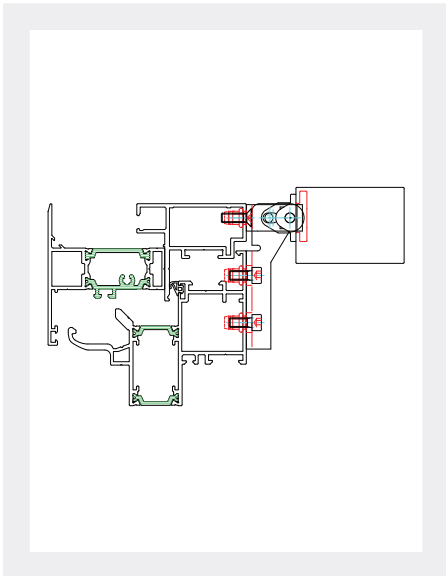
Download data sheets and CAD files from our product catalogue at www.secontrols.com

CHAIN ACTUATOR

TGCO 24 60 RANGE

Strong chain drive actuator used for vertical and sloping vents where a high forces and strokes are required with the following features :

- Voltage – 24v DC
- Standard finish – RAL 9006 & 9016
- Force – 600N (up to 600mm)
- Single and tandem versions available
- Stroke range – 400-800mm
- Warranty – 2 years/10,000 cycles
- CE certified



Download data sheets and CAD files from our product catalogue at www.secontrols.com

SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



CHAIN ACTUATOR

TGCO 24 500 - 700 RANGE

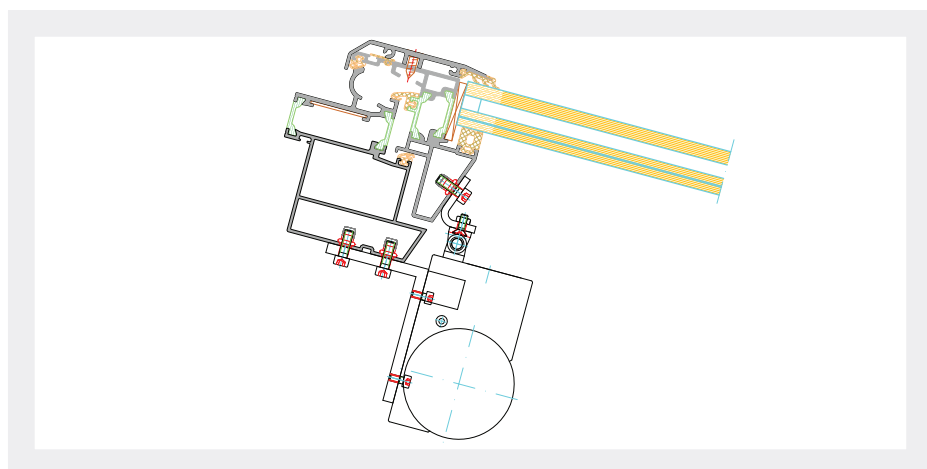
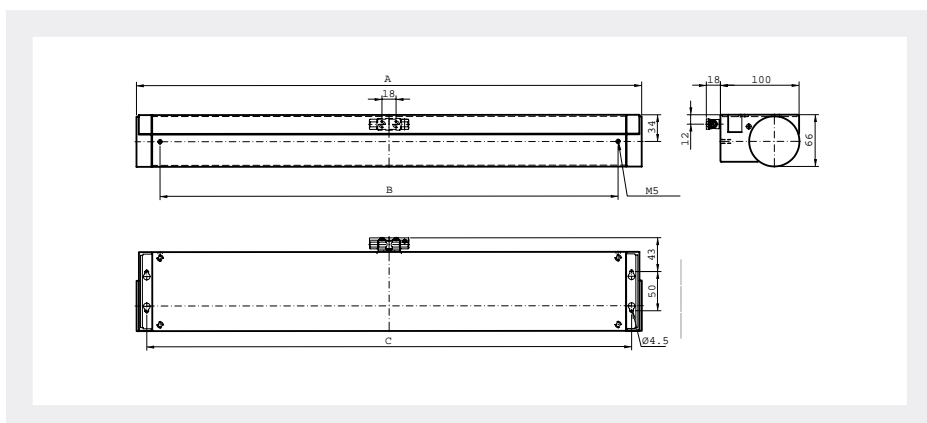
Extremely strong chain drive with a double width chain for use with vertical and sloping vents where high forces and strokes are required with the following features :

- Voltage – 24v DC
- Standard finish – RAL 9006 & 9016
- Force – 450-700N
- Single and tandem versions available
- Stroke range – 194-600mm
- Warranty – 2 years/10,000 cycles
- CE certified

There are also 230v single and tandem options available for natural ventilation only.

TGCA Locking Motors

The TGCO 24 volt range of chain actuators is available with automated multi point locking motors. See page 28. Consult our Technical Sales Team who will confirm the applicable product.



SUITABLE FOR:

Natural Ventilation

Smoke Ventilation

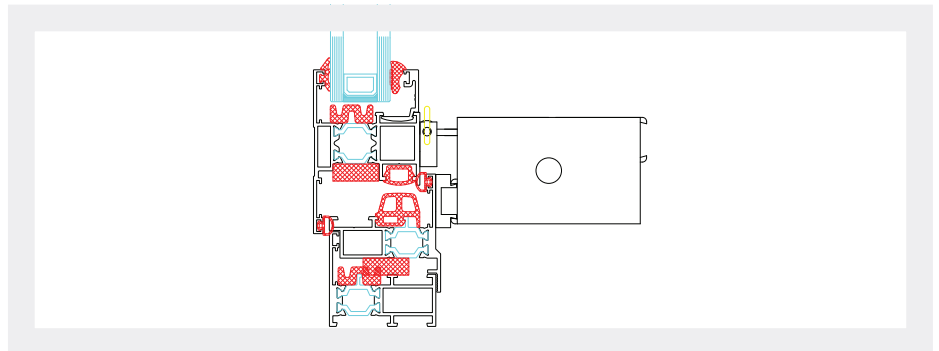
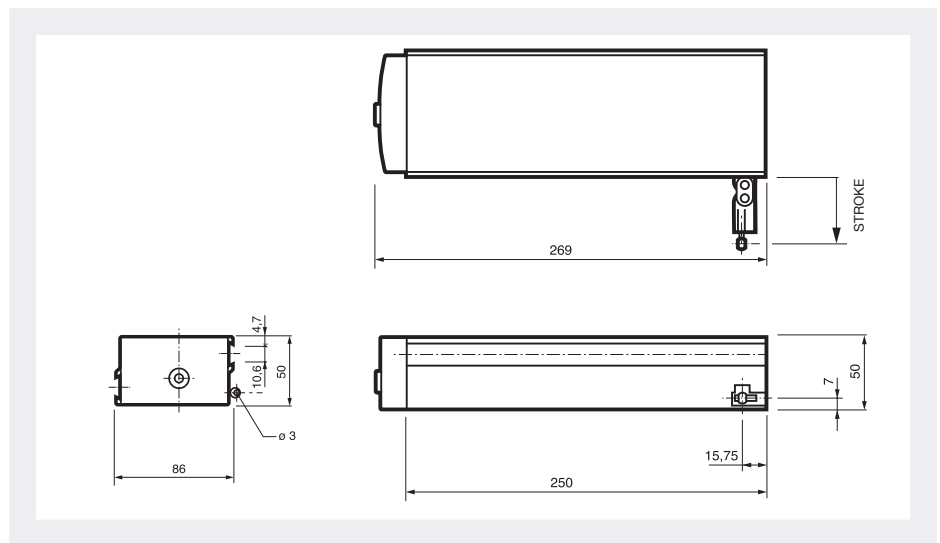
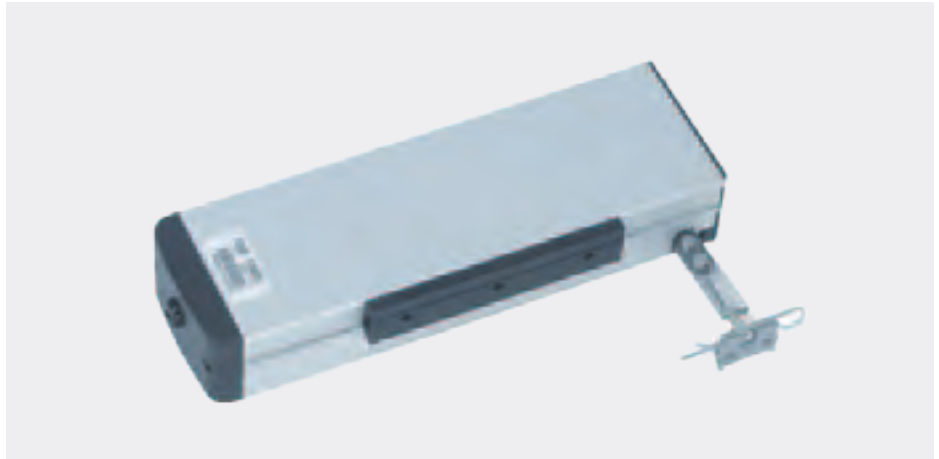


CHAIN ACTUATOR

SECO 15 & 24 15



The SECO 15 and 24 15 are a cost effective and extremely reliable chain actuators, predominantly used for natural ventilation applications with the following features :

- Voltage – 24v DC & 230v AC
- Force – 150N
- Stroke range – 250 & 380mm
- Standard Finish – Silver anodized (RAL available)
- Quick to install
- Quiet operation
- Warranty – 2 years/10,000 cycles
- CE certified



Download data sheets and CAD files from our product catalogue at www.secontrols.com

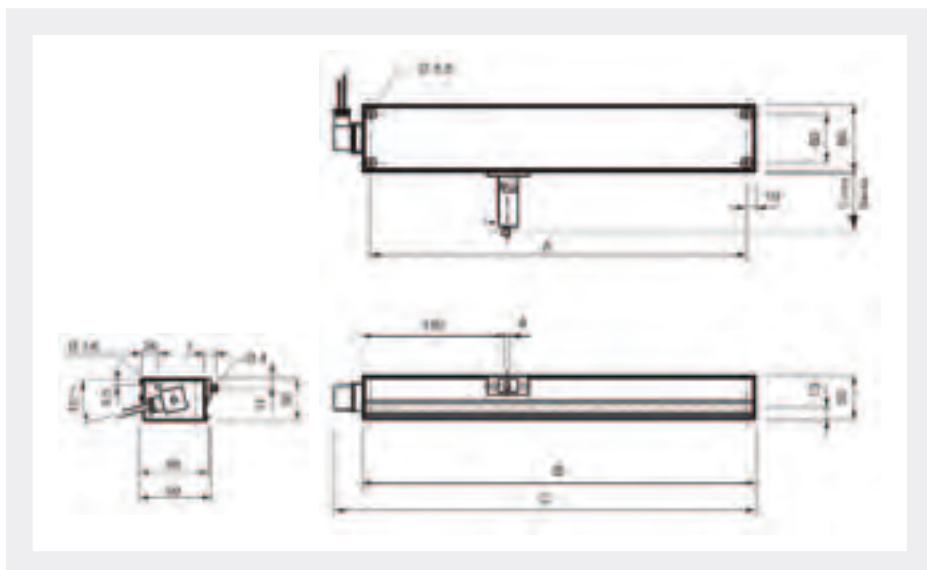
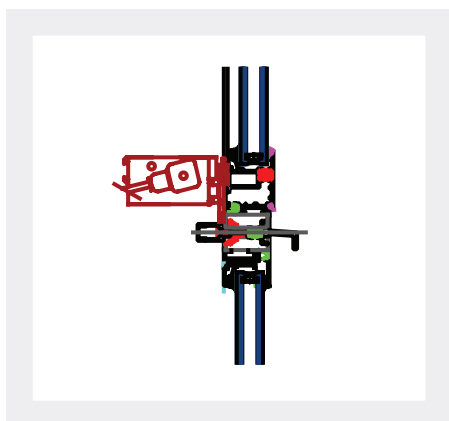
SUITABLE FOR:

Natural Ventilation 
Smoke Ventilation 

CHAIN ACTUATOR SECO 24 & 24 40

The SECO 24 & 24 40 are an extremely reliable chain actuator predominantly used for smoke vent applications with the following features :

- Voltage – 24v DC & 230v AC
- Force – 400N (up to 600mm stroke)
- Stroke range – 420,600 & 835mm
- Standard Finish – Silver anodized (RAL available)
- Tandem operation in an external sync unit
- Warranty – 2 years/10,000 cycles
- Wide range of fixing brackets
- CE certified



Stroke	Dim 'A'	Dim 'B'	Dim 'C'
420mm	458mm	478mm	514mm
600mm	553mm	573mm	609mm
835mm	667mm	687mm	723mm

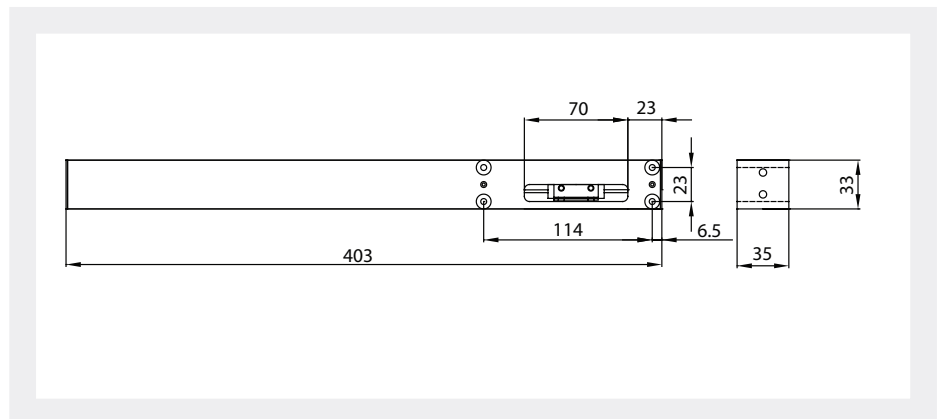
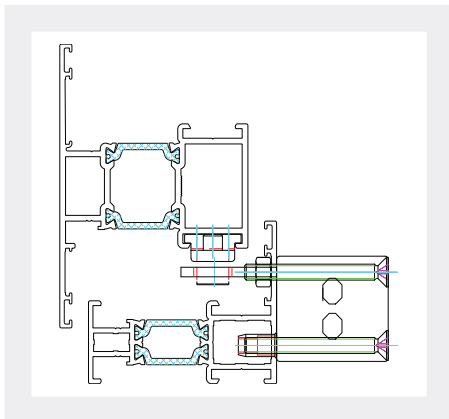
CHAIN ACTUATOR

TGCA LOCKING MOTOR

Our range of chain actuators and linear actuators are available with automated multi point locking motors with integrated sequential controls that will activate the locking mechanism and then the window actuator in the appropriate sequence.

Consult our Technical Sales Team who will be happy to advise on appropriate selection and use.

- Voltage – 24v DC
- Standard finish - Aluminium
- Force – 1200N / 600N



PRODUCT SECTION

Linear Actuators

Linear Actuators are predominantly used for sloping applications, where greater opening forces are required.

They can also be used on vertical vents where the vents are required to open to a distance greater than can be achieved by a chain actuator. They can be utilised to provide 90° opening if required.



LINEAR ACTUATOR

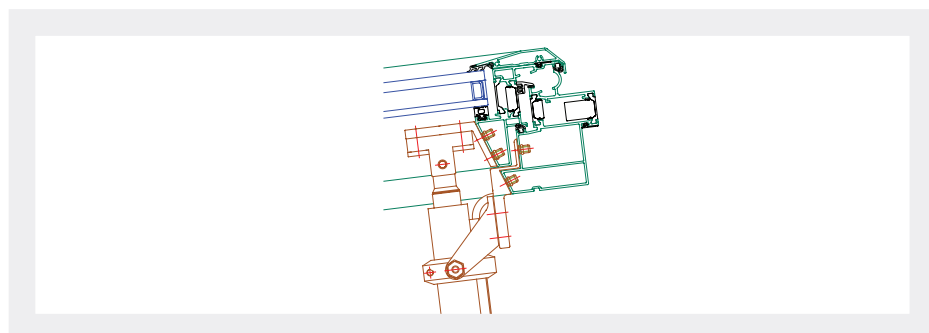
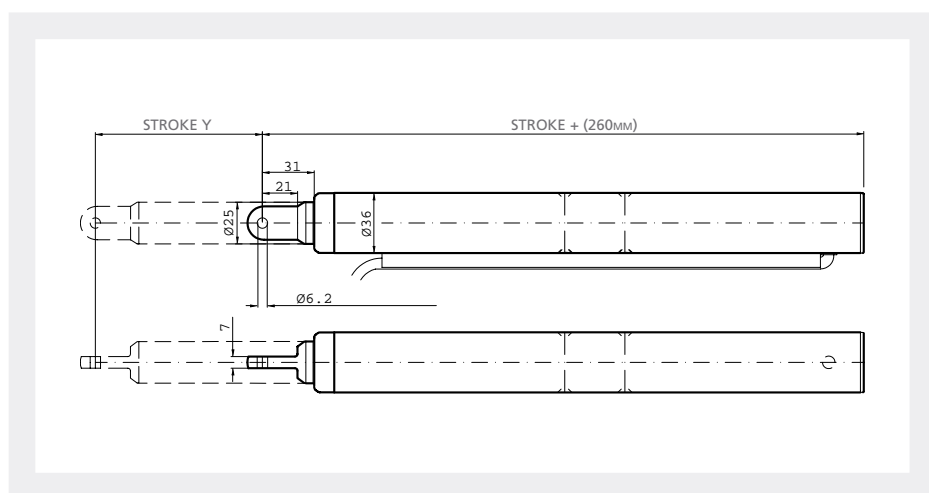
TGLA 24 50 - 2000 RANGE

An expansive range of cylindrical linear drives predominantly used to automate sloping vents where increased forces and opening distances are required.

Large vertical vents can also be automated where larger strokes and forces are required where a chain drive is unsuitable.

Single, tandem and multiple combinations are available plus integration with multi point locking motors for larger vertical vents.

- Voltage – 24v DC
- Force – 500N, 1000N, 1500N & 2000N
- Stroke Range – 100-1000mm
- Standard Finish – Silver Anodized (RAL available)
- Warranty – 2 years/10,000 cycles
- CE certified



SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



LINEAR ACTUATOR

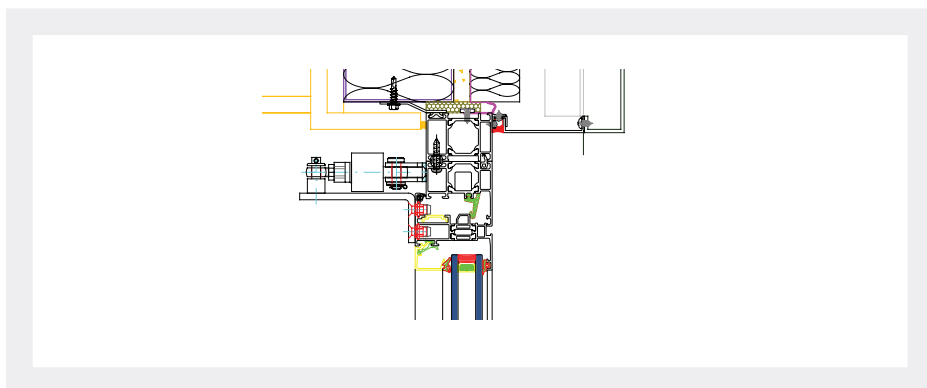
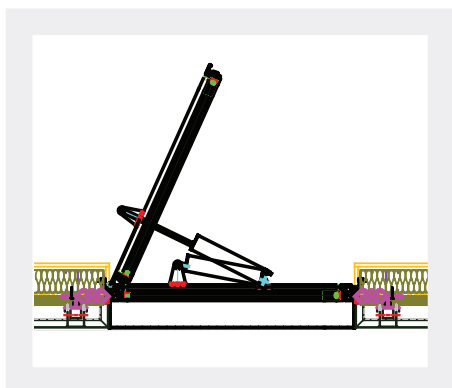
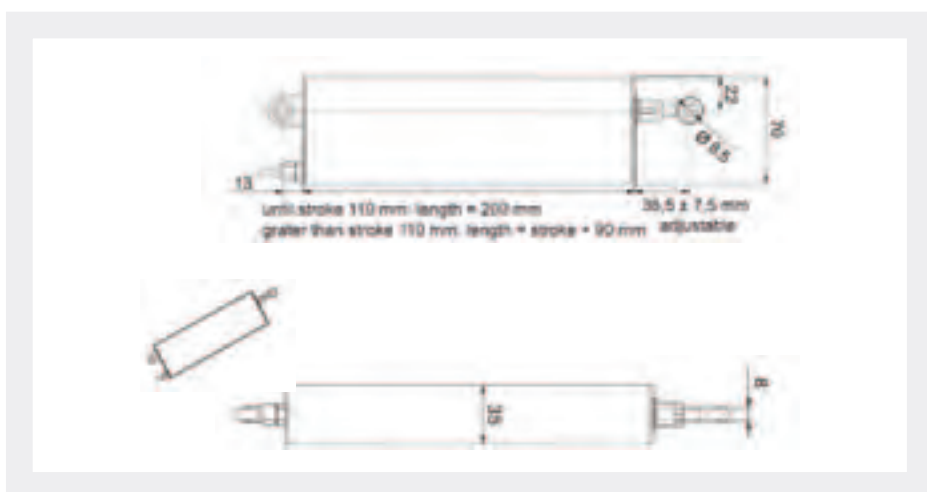
TGLA 24 500 6

A box linear drive with a short body to enable the automation of windows to large angles especially on residential smoke open in AOVs that are located within tight communal areas where a chain drive is unsuitable.

Often used for side hung open in AOVs where there is at least 40mm clearance at the head.

Single or tandem operation is available plus the addition of a multi point locking drive.

- Voltage – 24v DC
- Force – 500N
- Stroke Range – 100/150/200/250mm
- Standard Finish – Silver Anodized
- Warranty – 2 years/10,000 cycles
- CE certified



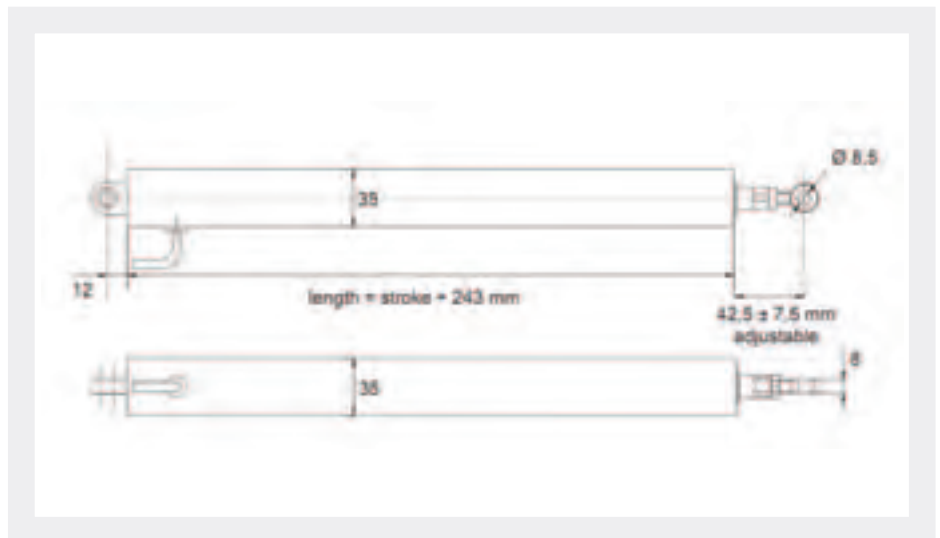
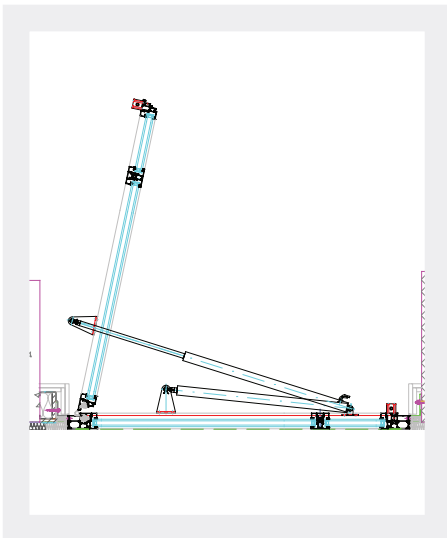
LINEAR ACTUATOR

TGLA 24 500 7

A very slim square linear drive used to enable the automation of windows to large angles plus smaller sloping vents.

Single or tandem operation is available plus the addition of a multi point locking drive.

- Voltage – 24v DC
- Force – 500N
- Stroke Range – 100/200/300/400/500mm
- Standard Finish – Silver Anodized
- Warranty – 2 years/10,000 cycles
- CE certified



SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



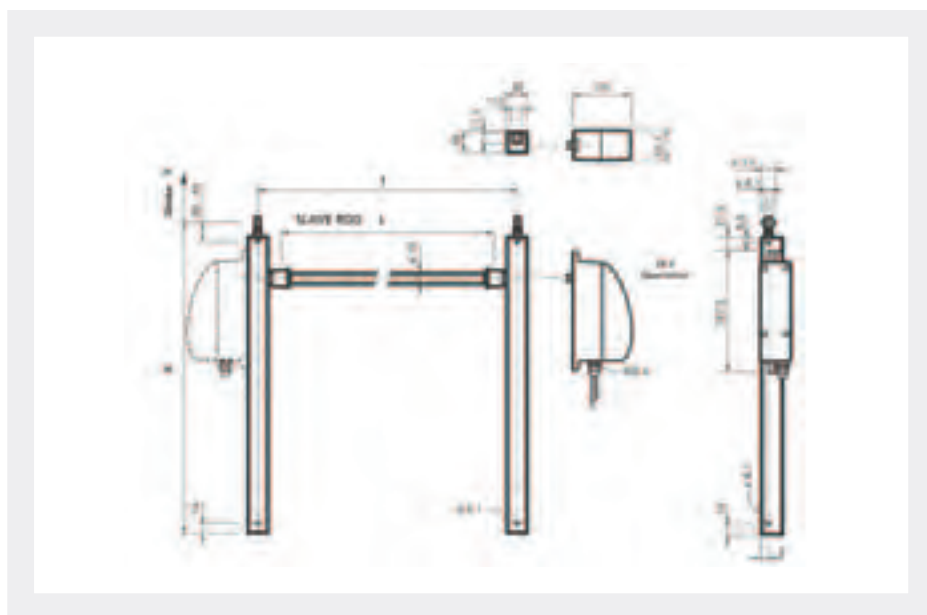
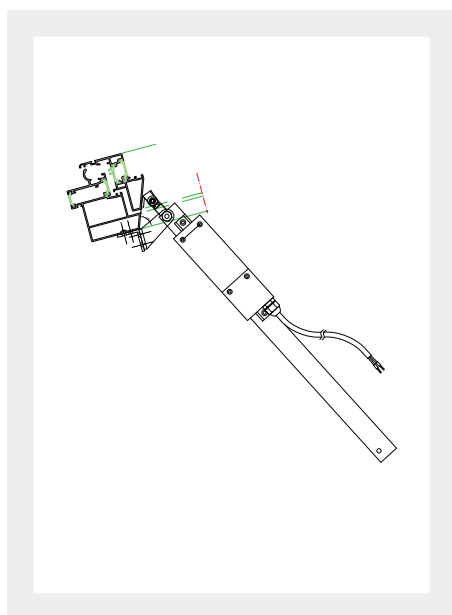
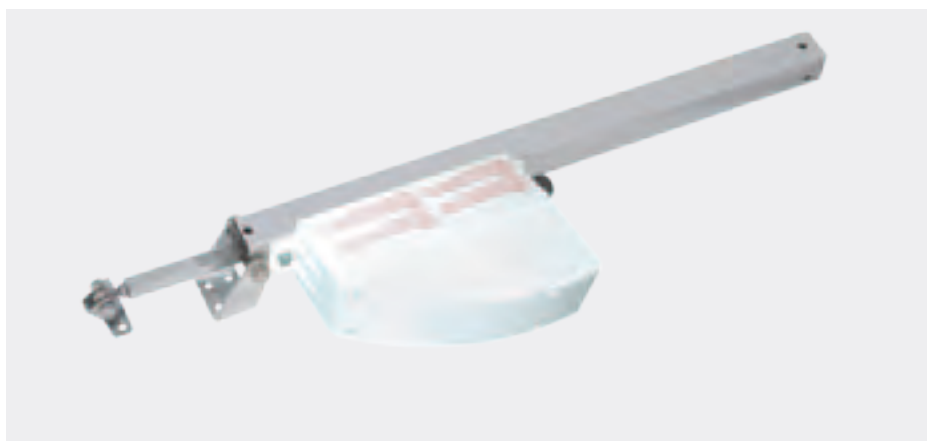
LINEAR ACTUATOR

SELA S & 24S

A cost effective linear rack type actuator predominantly used for sloping vents where strong forces are required.

Single and tandem operation is possible with a secondary rack and connecting rod.

- Voltage – 24v DC & 230v AC
- Force – 600N at 230v - 800N at 24v
- Stroke Range – 350,550,750 & 1000mm
- Standard Finish – Silver Anodized (RAL available)
- Warranty – 2 years/10,000 cycles
- CE certified



Download data sheets and CAD files from our product catalogue at www.secontrols.com

SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



LINEAR ACTUATOR

SELA G & SELA P

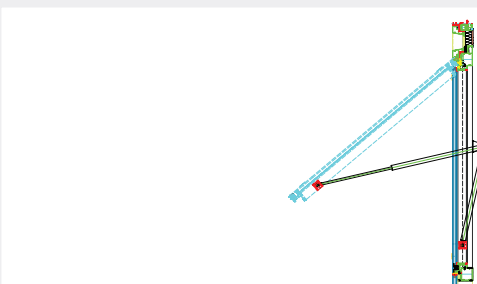
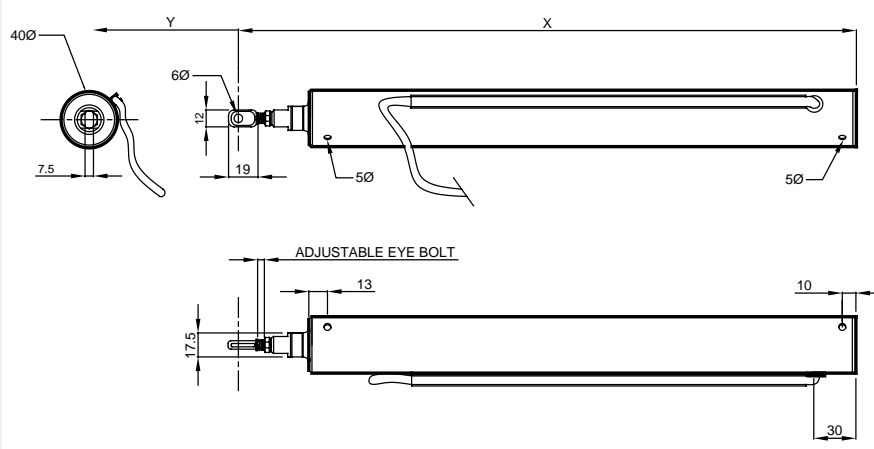
The SELA range of linear drives are strong cylindrical actuators predominantly used for sloping vent applications and windows requiring large angles of opening where a chain drive is insufficient.

The SELA P is identical to a SELA G but has a rear eye for fixing from the rear.

The SELA G linear actuator hangs perpendicular to the vent, whereas the SELA P is a double pivoting solution, avoiding large opening angles.

Single and tandem versions are available.

- Voltage – 24v DC
- Force – 400N, 650N, 1000N
- Stroke Range – 100-1000mm
- Standard Finish – Silver Anodized (RAL available)
- Warranty – 2 years/10,000 cycles
- CE certified



SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



Download data sheets and CAD files from our product catalogue at www.secontrols.com

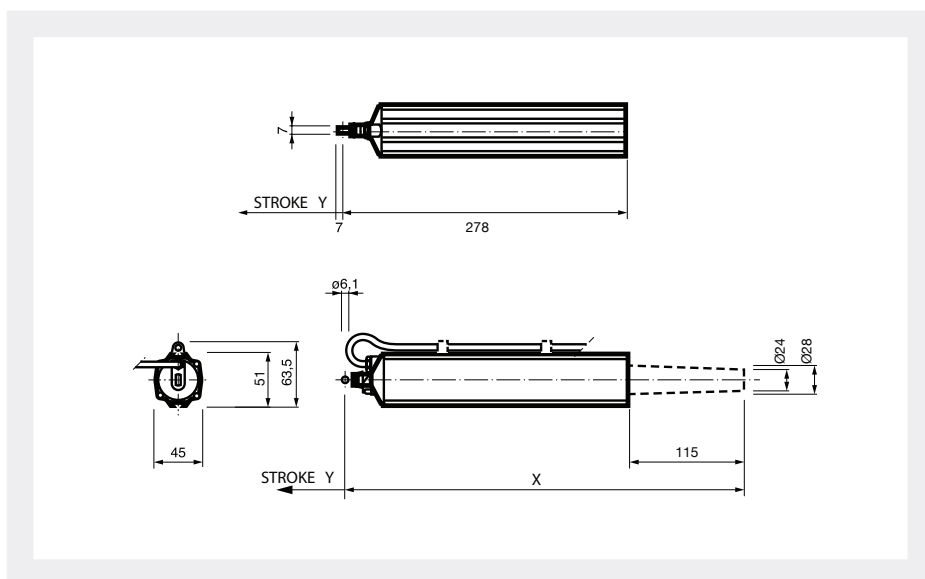
LINEAR ACTUATOR SELA 20

Small compact linear actuator used for natural ventilation via small sloping vent applications.

The bottom T attachment also allows the actuator to operate adjustable louvres.

- Voltage – 230v AC
- Force – 200N
- Stroke Range – 105/180/300mm
- Standard Finish – Silver Anodized

NB: Voltage to 230v linear actuators must be switched off after each operation, with a rest period between cycles.



SUITABLE FOR:

Natural Ventilation

Smoke Ventilation

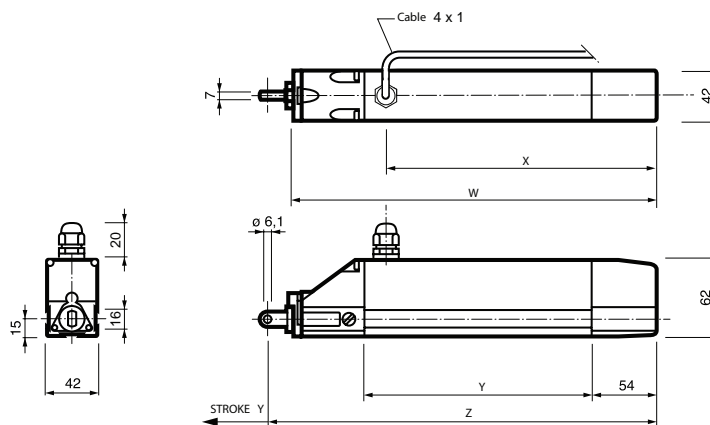


LINEAR ACTUATOR SELA 45

Cost effective linear drive actuator mainly used for sloping natural ventilation applications and roof lights.

- Voltage – 230v AC
- Force – 450N (1000N for 70mm)
- Stroke Range – 70/200/300/500mm
- Standard Finish – Silver Anodized

NB: Voltage to 230v linear actuators must be switched off after each operation, with a rest period between cycles.



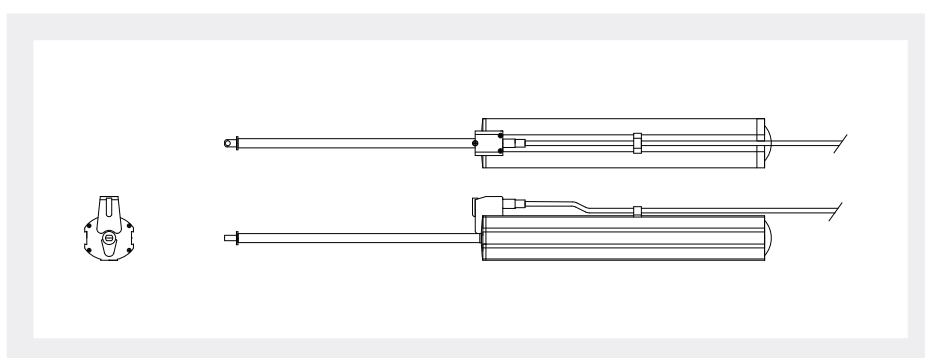
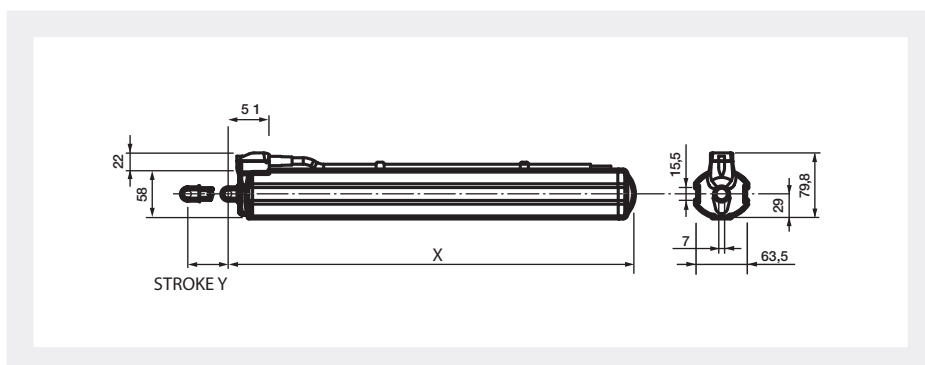
LINEAR ACTUATOR SELA 50

Highly versatile linear actuator mainly used for sloping vent and roof light natural ventilation applications.

Sliding fixing bracket allows easy installation.

- Voltage – 230v AC
- Force – 500N
- Stroke Range – 200/300/400mm
- Standard Finish – Silver Anodized

NB: Voltage to 230v linear actuators must be switched off after each operation, with a rest period between cycles.

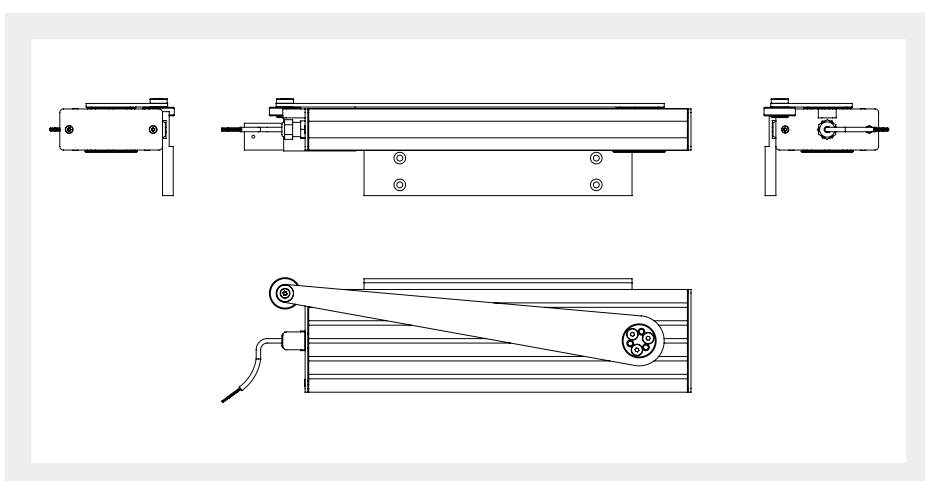


LINEAR ACTUATOR

FOLDING ARM ACTUATOR

Very large opening angles of up to 140° can be implemented with this folding arm actuator that is suitable for SHEV systems.

- Voltage – 24v DC
- Force – 500/800/1000N
- Stroke Range – 710mm
- Standard Finish – ALU E6/EV
- IP rating of IP54
- Low current consumption for high energy efficiency
- Tested to EN 12101
- Opening time less than 60 seconds
- Programming interface
- Roller version available



Download data sheets and CAD files from our product catalogue at www.secontrols.com

SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



PRODUCT SECTION

Application Products

A complete range of building envelope automation products are available for both smoke and natural ventilation applications, all of which are tested to current regulations.

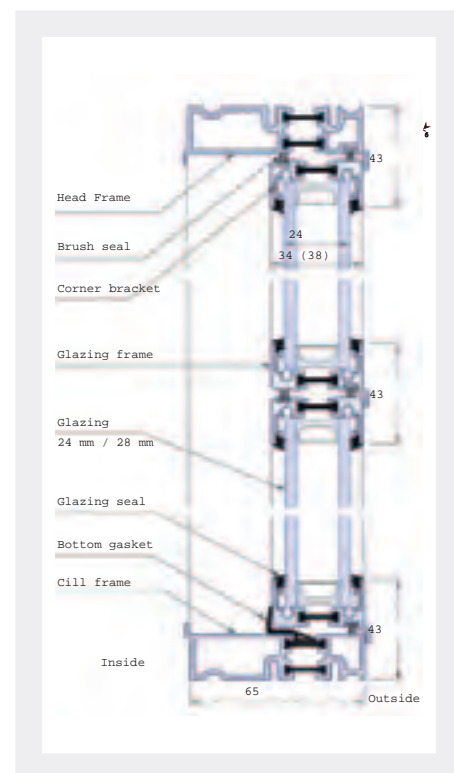
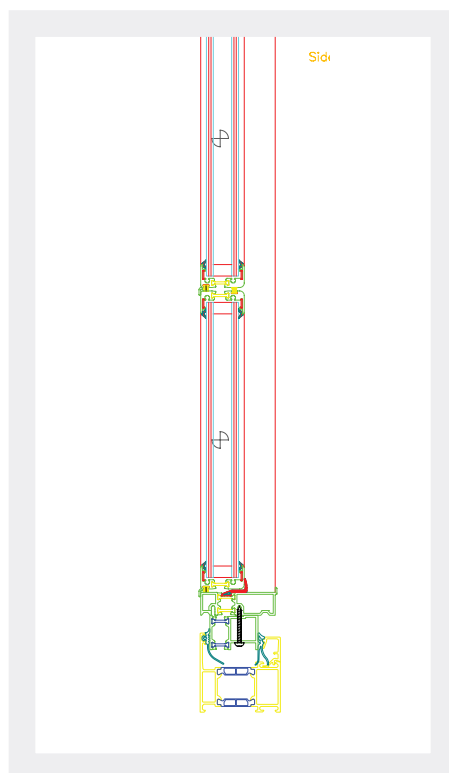


APPLICATION PRODUCTS

SHEVTEC GLAZED LOUVRE

High quality glazed louvre for both glazed in applications or into brickwork/cladding applications

- Tested to EN12101-2 smoke vent regulations
- Dual colour options
- Single and double glazed options up to 38mm
- Anti finger entrapment actuator available
- Thermally broken
- Glazed in adaptor
- High % ventilation coefficient of free area



Download data sheets and CAD files from our product catalogue at www.secontrols.com

SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



APPLICATION PRODUCTS

SHEVTEC GLAZED SMOKE VENTS

Sloping and vertical smoke vents all tested to EN12101-2 smoke vent regulations for commercial and end of corridor residential smoke ventilation applications.



Download data sheets and CAD files from our product catalogue at www.secontrols.com

SUITABLE FOR:

Natural Ventilation

Smoke Ventilation

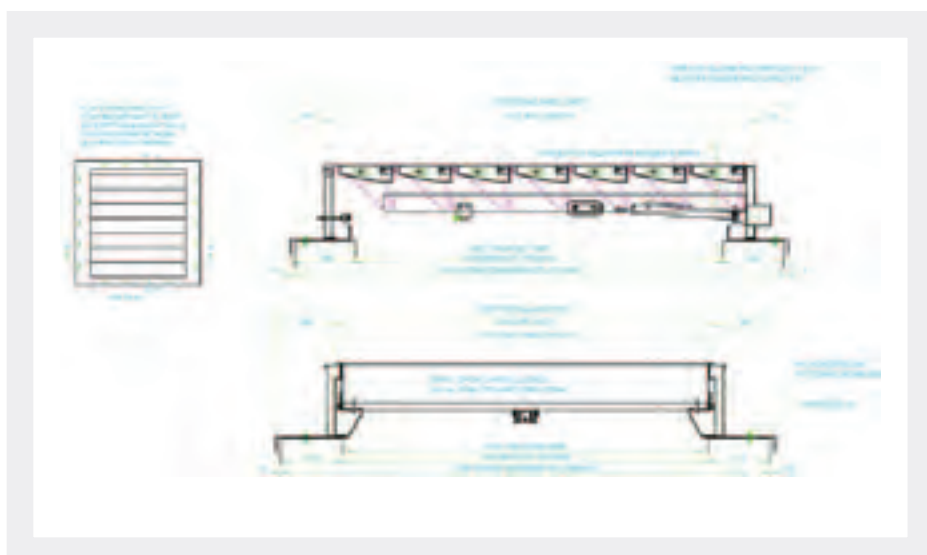


APPLICATION PRODUCTS

SHEVTEC AUTOMATED ALUMINIUM LOUVRES

Predominantly used for smoke ventilation at the top of escape stairs and fire fighting stairs. Also installed within roofing systems for smoke extract. Tested to EN12101-2 smoke vent regulations.

Our hinged aluminium louvre provides access to the roof where required.



Download data sheets and CAD files from our product catalogue at www.secontrols.com

SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



APPLICATION PRODUCTS

SHEVTEC DOMELIGHTS

Predominantly used at the head of staircases for smoke ventilation where light is required into the space.

The vent must open to 140 degrees to meet smoke design and product regulations



Download data sheets and CAD files from our product catalogue at www.secontrols.com

SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



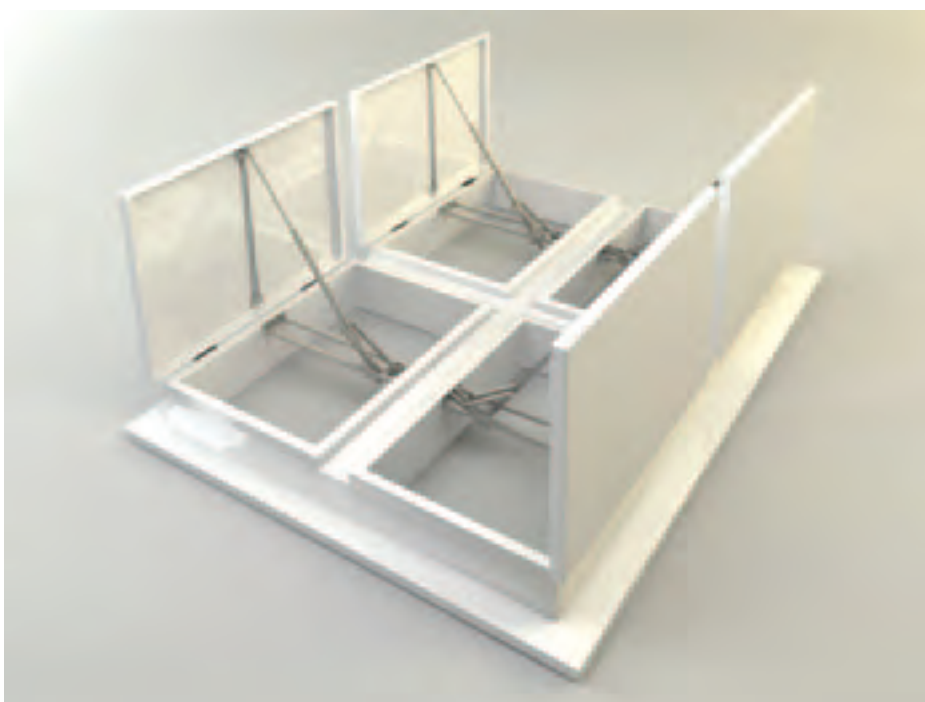
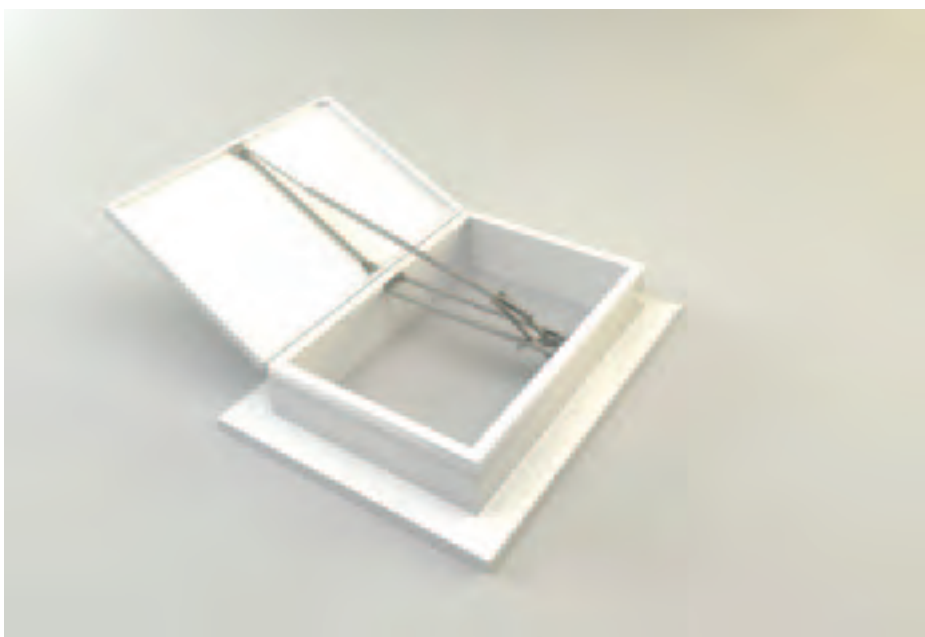
APPLICATION PRODUCTS

SHEVTEC SINGLE/DOUBLE FLAP VENTILATORS

High quality single and double flap ventilators, tested to EN12101-2 smoke vent regulations.

The single flap opens to 160° and an access version is available.

The double flap opens to 90° and prevents positive pressure into the shaft.



Download data sheets and CAD files from our product catalogue at www.secontrols.com

SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



PRODUCT SECTION

Control Systems

SE Controls design, manufacture install and commission the most comprehensive range of control systems to suit every application for both smoke and natural ventilation bespoke to the façade/envelope automation industry.

Every product is rigorously tested in the UK to the required standards, including CE and EMC.

Whilst controls often fall into the M&E package, it is imperative the controls are compatible with the actuators they operate.



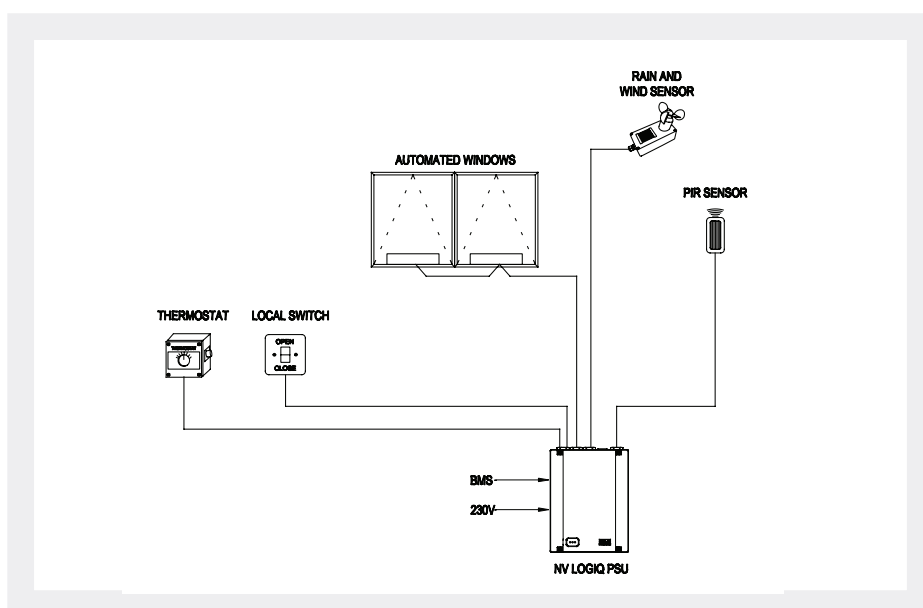
CONTROL SYSTEMS

NVlogiQ PSU



The NV LogiQ PSU is an intelligent power supply unit that can operate actuators via a simple switch, external sensors, as a stand alone system or as a slave to a Building Management System (BMS).

Features :

- Compact aesthetic design
- 230Vac-24vDC transformer/rectifier
- 6A output
- Switch and BMS volt free inputs
- BMS 0-10v inputs to deliver graduated opening in 10% increments (5% with NV LogiQ Controller)
- BMS lock out period (programmable) to prevent conflict with local switch
- Associated sensor inputs (stat, rain, wind etc)
- Actuator cycle monitoring to protect operational frequency warranty.
- External LED status indicators
- CE certified



SUITABLE FOR:

Natural Ventilation 
Smoke Ventilation 

Download data sheets and CAD files from our product catalogue at www.secontrols.com

CONTROL SYSTEMS

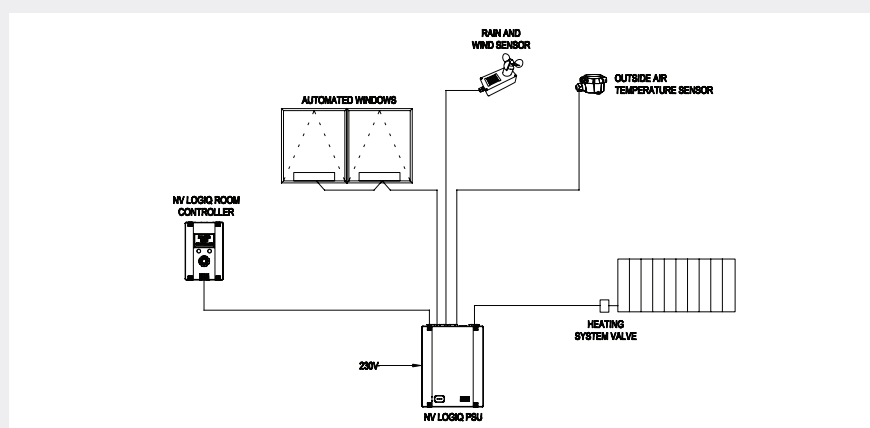
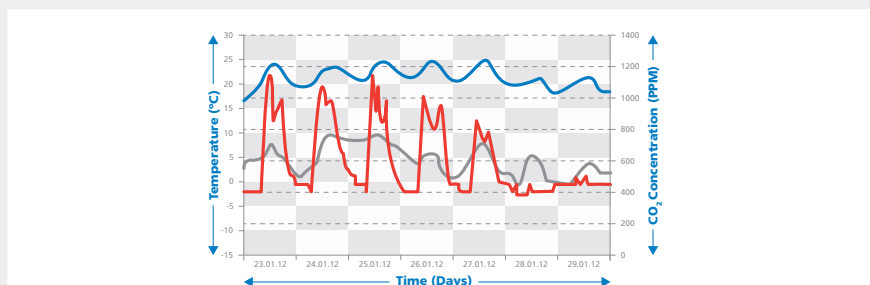
NVlogiQ ROOM CONTROLLER

In conjunction with the PSU the NV LogiQ controller provides the ultimate solution for an automated natural ventilation system within a classroom or office space in addition to providing energy efficiency and night purging features.



An inbuilt control strategy which takes into account internal temperature CO₂ and humidity relative to the outside conditions and time day month and year ensures optimum working and energy efficient conditions.

Features :

- Data logging for system design for existing buildings and post installation monitoring
- Red amber and green indication of CO₂ to educate and inform occupants
- Inbuilt pre-programmed strategy (reprogrammable after monitoring period)
- Occupants override switches with auto lock out (adjustable time period)
- LCD graphic display of room conditions
- Neat compact design
- Individual room system with global control options (rain close global evening close etc)
- Radiator control in conjunction with ventilation products (window actuators louvres stacks etc)
- CE certified



SUITABLE FOR:

Natural Ventilation 
Smoke Ventilation 

Download data sheets and CAD files from our product catalogue at www.secontrols.com

CONTROL SYSTEMS

OS2 TYPE 21,22,23 & 24

The OS2 controller range is a compact stand alone or BMS interface networked controller for both smoke and natural ventilation solutions vastly reducing expensive cable runs by locating the power supplies locally to the vents.

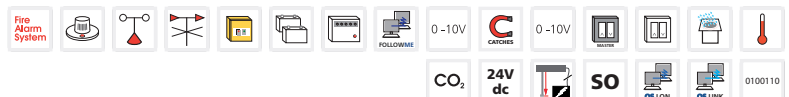
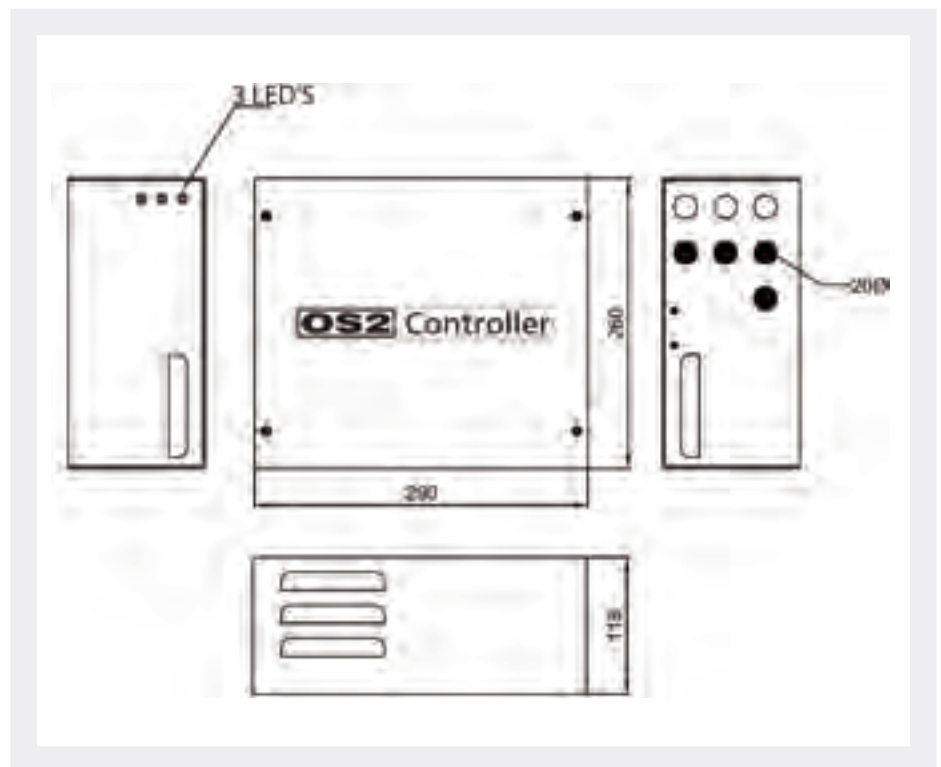
The intelligent inbuilt power and control board provides interfaces with all common fire alarm and BMS systems plus communication boards can be added to suit bespoke building automation protocols (languages).

The addition of sensors switches and smoke detectors can create a stand alone system if required.

Standard and programmable façade automation parameters are inbuilt to suit all project requirements.

Features include :

- 230v AC – 24vDC transformer rectifier 5A type 22 8A type 24
- Monitored battery back up for smoke ventilation 5A type 21 8 Amp type 23
- Small compact controller
- Networked or stand alone operation
- CE certified
- Standard BMS & fire alarm interfaces plus plug in protocol boards
- Actuator cycle monitoring to protect warranties
- Large switch and sensor range for both smoke and natural ventilation applications
- Local switch with BMS lock out period (programmable)
- External status LED's
- Multi zone modular panels available
- Internal communications protocol - SE Controls OSLINK
- External communications protocol - LON, BACNET or universal gateway



SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



Download data sheets and CAD files from our product catalogue at www.secontrols.com

CONTROL SYSTEMS

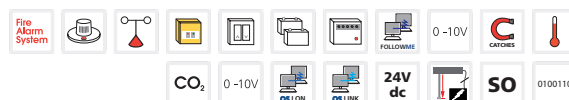
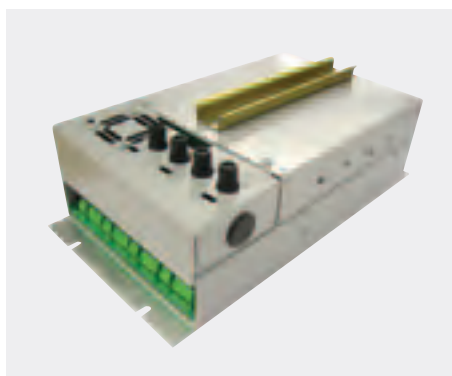
MODULAR PSU CONTROL PANELS

Combined with the intelligent power and control board the modular PSU range provides efficient control of large control zones or actuator groups with high amperage draws (particularly smoke vents).

Single or multiple use of the 30 Amp power supply unit provides versatility in both amperage and zone requirements.

Features include :

- All features of the OS2 range
- 30,60,90,120,150 amp panel sizes
- Tailored solutions from standard template layouts



Download data sheets and CAD files from our product catalogue at www.secontrols.com

SUITABLE FOR:

Natural Ventilation

Smoke Ventilation

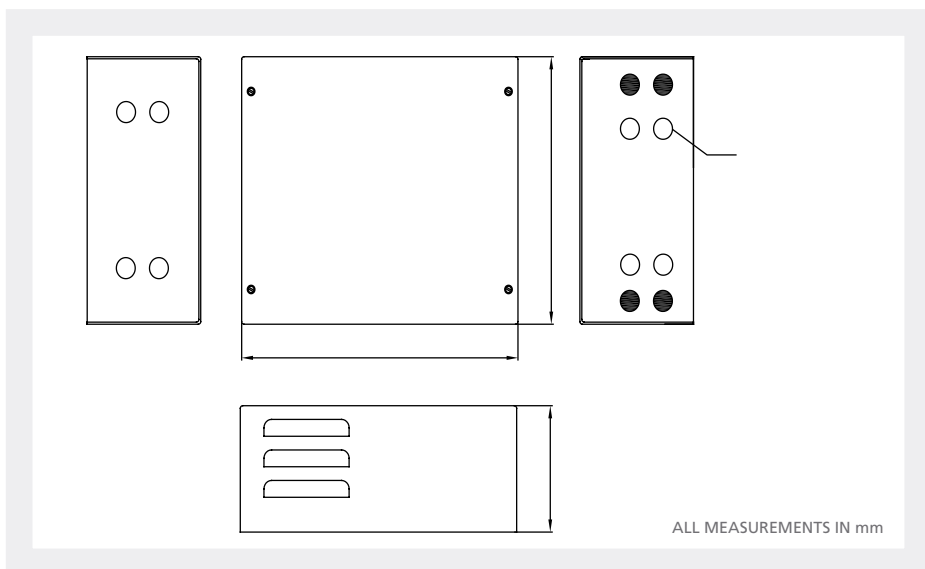


CONTROL SYSTEMS

230v AC CONTROLLER

The 230v AC controller is a compact stand alone or BMS interface networkable control system for 230v actuators with the following features :

- 6 Amp output
- Standard BMS interface
- Plug in cards for alternative protocols
- Add on sensors and switches for a stand alone natural ventilation system
- CE certified



Download data sheets and CAD files from our product catalogue at www.secontrols.com

SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



CONTROL SYSTEMS

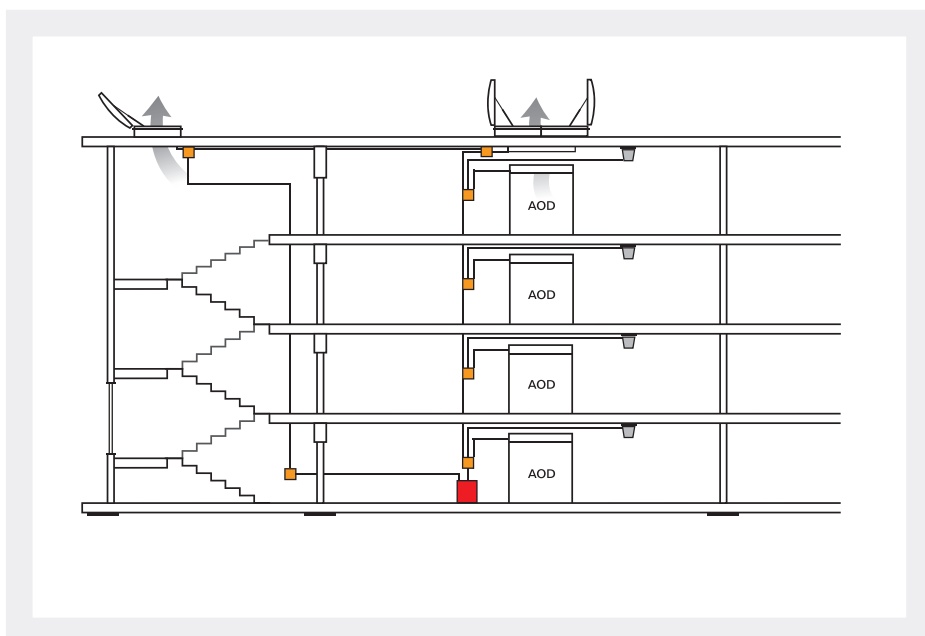
OSLOOP

OSLOOP is a looped smoke ventilation control system exclusively used in high rise residential applications such as apartments hotels and student accommodation. It is also used for vertical smoke shafts within commercial buildings.

Huge savings in cabling can be made as both power and data is looped between Manual Control Points which receive fire alarm or smoke detector signals and actuator cable directly.



The OSLOOP system can be used for AOV end of corridor windows or vertical smoke vents.

- PR EN 12101 – 9 compliant
- EN 12101 – 10 compliant
- ISO 21927 – 9 compliant
- ISO 21927 – 10 compliant
- CE certified



Download data sheets and CAD files using the search bar at www.secontrols.com

SUITABLE FOR:

Natural Ventilation 
Smoke Ventilation 

CONTROL SYSTEMS

SWITCHES & SENSORS

A complete range of sensors and switches both standard and bespoke is available from SE Controls for all applications.

All products are compatible with the SE Controls extensive range of control systems.



External temperature sensor



Wind speed and direction sensor



CO₂ temperature sensor



Open / close switch



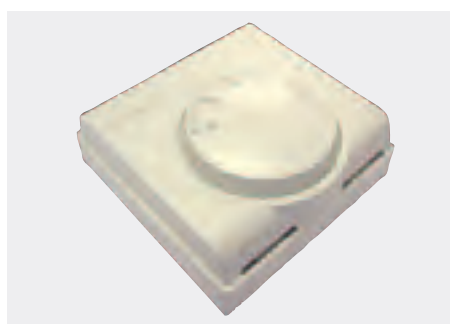
Manual override switch / key switch



Rain sensor



Manual Control Point



Thermostat



Smoke detector

Download data sheets and CAD files from our product catalogue at www.secontrols.com

CONTROL SYSTEMS

TG WPS

The TG WPS is a sensor that will stop an automatically closing window that is located within a risk area where alternative solutions such as actuator specification and risk assessment cannot reduce the risk sufficiently.

Prior to specifying or requesting the WPS ensure a risk assessment is carried out on your behalf by our technical support staff.



SUITABLE FOR:

Natural Ventilation

Smoke Ventilation



Glossary of terms

SMOKE VENTILATION

AOV (Automatic Opening Vent)

Typically a casement or louvre operated automatically to its required position via a 24v DC electric actuator.

Approved Document B (2006) – Building Regulations

Prescriptive requirement for smoke ventilation. Details free area requirements methods of measurement and product standards for AOVs.

Approving Authority

The person or body responsible for the verification of design and installation of a smoke ventilation system. This could be Local Authority Building Control, NHBC (National House Building Council) or Approved Inspectors in conjunction with local Fire and Rescue services.

AvCv or Aerodynamic Free Area

Measured performance of a smoke vent calculated in square metres. Size hinge arrangement and opening angle will affect the AvCv which results in an efficiency percentage applied to the area. Many Consultants will assume a 0.6 Cv (60%) coefficient but you must apply the Cv of your particular vent. (see coefficient of discharge). The Cv can range from 0.3 to 0.65 dependent upon the vent criteria and opening angle and vastly affects the quantity of AOVs required.

BRE - British Research Establishment

Have produced many performance and design documents used in smoke ventilation design.

Breakglass/reset switch

Old terminology for the Fireman's control switch (see MCP). These are historically yellow but new MCP's are now orange.

BS 5588 series

Previous design standards prior to the publication of BS 9991 & 9 series.

BS 9991 (2011)

Code of practice for fire safety in the design, management and use of residential buildings. Includes design guidance for residential smoke ventilation systems including product standards, performance and functional requirements.

BS 9999 (2008)

Code of practice for fire safety in the design, management and use of buildings. Includes design guidance for non-residential smoke ventilation systems.

BS 7346 Part 1 (1991)

Natural smoke vent certification standard prior to EN12101-2. Vents tested to this old standard do not comply as the standard was superseded by EN12101-2 and withdrawn by the BSI. Other parts of the BS 7346 are still current especially reference to maintenance (part 8).

BS 8519 (2010)

Design standard for smoke ventilation system cable installation.

CFD - Computational Fluid Dynamics

Computer simulation analysis of air and smoke behaviour in a building. Used in fire engineered solutions and natural ventilation designs to provide confidence of the potential performance when designing outside of the prescriptive standards and regulations.

Chain Actuator

Should be tested to EN12101-2 Annex G when used for smoke ventilation plus CE marked to demonstrate conformity with EMC 89/336/EEC and LVD 2006/95/EC.

Coefficient of Discharge (Cv)

Percentage efficiency factor of a smoke vent relative to the opening angle and vent arrangement. Proven via test under EN12101-2 but in the absence of test data the maximum Cv that can be applied is 0.4 (see previous free area section).

Direction of smoke flow

The path that smoke takes to exit a vent representing the area of the vent that can be used to calculate the geometric free area (see page 10).

EN 12101 part 2 (2003)

Current natural-smoke vent certification standard. The standard contains several annexes including test criteria to establish aerodynamic coefficients of discharge ability to operate against imposed, operational reliability loads and performance at high temperature (annexe G).

EN 12101 part 9

Imminent European standard against which all control systems used to operate smoke control systems will be tested and CE marked to. ISO 21927-9 is a published standard against which manufacturers can demonstrate compliance for their control products.

EN 12101 part 10

Current European standard against which all power supplies used to control smoke control systems must be tested and CE marked.

FIRAS

A third party certification scheme for smoke vent system installers. Operated by Warrington Certification in conjunction with the Smoke Control Association.

Fire Engineered Solution

A smoke ventilation system designed outside the prescriptive regulations and usually in line with the guidance of BS7974. These designs often require CFD analysis to back them with the Designer offering substantial pedigree and PI (professional indemnity) insurance. The design will need to be approved by the Authorising Authority prior to commencement of the works.

FP or MIC Cable

Fire rated cable used between the control system and the smoke vent to ensure power gets to the vent when exposed to fire and high temperature. (refer BS 8519).

GFA - Geometric free area

The physical free area of a vent produced when open. It does not indicate the 'effectiveness' of a smoke vent but can be used for specific applications.

Internal Throat Area

The rectangular clear internal dimension of a vent (width and height) used for free area calculations.

LABC – Local Authority Building Control

Regional body mostly responsible for the verification of the design and installation of smoke ventilation systems.

Linear Actuator

Should be tested to EN12101-2 Annex G when used for smoke ventilation.

LSF Cable

Low smoke and fume silicone actuator cable rated for high temperature operation (but not fire rated). This cable is commonly used to connect the actuator locally to FP or MICC field wiring due to its flexibility but should not be used as fire rated cable installation.

Manual Control Point (MCP)

The official terminology for an Fireman's switch. This is now an orange switch as required in EN12101-10 and provides fire personnel operation of the smoke vents. Standard and tamper proof MCP's are available in the SE Controls smoke vent control systems ranges.

NSHEVS

European terminology for certified smoke vents compliant to the EN12101-2.

OV – Opening Vent

Manually openable vent used for smoke ventilation this could be electrically operated via an MCP in areas where the vent is inaccessible such as fire fighting and escape stairs or manual handle operated.

Regulatory Reform (Fire Safety) Order (RRO)

Under this legislation, a building owners employers and managers are solely responsible for the provision of effective and compliant fire safety solutions within their premises. Failure to comply with any requirement under the RRO or specific corrective measures issued within an RRO compliance notice issued by the enforcing authority is an offence and is likely to result in prosecution together with a fine or custodial sentence.

SCA – Smoke Control Association (SE Controls are members)

Trade organisation responsible for driving standards and approved methods for smoke ventilation in the UK.

SHEVS - Smoke and Heat Exhaust Ventilation Systems

European terminology for certified smoke ventilation systems compliant to the EN12101 series.

Snow Load

Imposed load that needs to be factored into sloping smoke vent calculations but often overlooked. Measured in newtons or pascals the snow load often exceeds the dead weight of the vent resulting in the need for actuators twice the strength normally selected.

Wind Load

Imposed load that also needs to be factored into smoke ventilator calculations. Actuators must be calculated to open against designed wind loads.

Wind Directions

Wind direction needs to be considered when designing the location of smoke vents. Incorrect positioning can result in positive pressures being imposed resulting in smoke blowing back into the building.

Wind Baffles

Now often used for sloping smoke vents and rooflight applications to negate the effect of side winds upon the exhaust performance.

NATURAL VENTILATION

Approved Document F – Building Regs

Purpose provided ventilation of fresh air for breathing, displacement of pollutants, odour & humidity for dwellings and non-dwellings. Background ventilation energy efficiency and indoor air quality are all factors with the regulation stating flow rates free area requirements and acceptable levels. Requires the use of effective free area performance of vents (as opposed to geometric).

BMS or BEMS –

Building (Energy) Management System

A centralised system monitoring and controlling HVAC systems and products to provide an overall building control strategy. Stand alone systems such as OS2 and NV LogiQ from SE Controls can also deliver this for individual room or total dynamic building control.

BREEAM

A BRE method to assess the environmental performance of a building. Includes all aspects of building's impact on environment (even transport). Score points (credits) for every aspect of building's impact, above and beyond normal regs / standards. PASS, GOOD, VERY GOOD, EXCELLENT. Different assessments for Schools, Offices & Health Buildings. Good BREEAM ratings result in lower running costs via reduced energy usage therefore higher rental yields and saleability of buildings. The use of natural ventilation such as façade automation systems gains a credit.

Building Bulletin 87 (BB87)

Guide for environmental design for schools ADL2, Heating & Thermal Performance, Ventilation & indoor Air Quality, Lighting, Hot & Cold Water Supplies. School Premises Regulations.

Building Bulletin 93 (BB93)

Acoustic performance of naturally ventilated school buildings. Details noise entry from outside and noise generated internally.

Building Bulletin 101 (BB101)

Regulatory framework and design Guide for ventilation of school buildings. This lays out the target parameters for optimum performance in relation to temperature and CO₂ and required air changes (measured in litres per second per person) when recommended set points are exceeded. Approved Documents F and L are detailed within BB101. Studies have proven that poor IAQ results in a 10-15% reduction in output performance and learning ability. SE Controls are qualified to calculate the required flow rates and free areas via the façade in relation to the requirements of the standard.

CIBSE – Chartered Institute of Building Services Engineers

CIBSE Nat Vent Group (SE Controls are members)

The CIBSE Nat Vent Group is responsible for publishing design guides for natural ventilation. SE Controls are members of this group.

CIBSE Guide A 'Environmental Design' CIBSE Guide B 'Heating Ventilation Air conditioning and Refrigeration'

Design guides for best practice of system design and performance.

CIBSE Guide AM10 'Application Manual

"Natural ventilation in non-domestic buildings"

A comprehensive handbook on how to design natural ventilation into a building. Includes prescriptive calculation methods.

CWCT Technical Note TN 74 "VENTILATION" (November 2011)

Concentrates on ventilation through the façade. Refers to Approved Document F, CIBSE AM10, CIBSE Guide A, BS5925:1991, BS 6375: Part 1 2009, BB101, School Premises Regulations.

Effective Free Area (also Equivalent Free Area)

The effective free area of a vent taking into account the inefficiency of airflow through apertures giving a true performance. (see previous free area section)

Energy Performance Of Buildings Directive (EPBD)

EU directive to reduce energy used in buildings to cut carbon emissions. All buildings to have energy performance certificate at time of sale or rent (except heritage & some factories). Large & public buildings to display this. In UK based on ADL 2006 & must demonstrate compliance with ADL 2006. Implemented into UK law Jan 2006.

HVAC – Heating Ventilation and Air Conditioning

The technology of indoor and automotive environmental comfort control which includes window/façade automation.

Indoor Air Quality - IAQ

Measured in parts per million of CO₂ indoor air quality is maintained by introducing fresh air changes when the CO₂ exceeds acceptable levels.

Morning (fresh air) Purge.

Introduction of fresh air in the morning prior to building occupancy via the automation of façade products (vents louvres etc).

Night Purge (Free Night Cooling)

The process of introducing cool air into a building at night during warmer periods of the year. When the internal to external temperature differential is advantageous automated vents allow cool nighttime air to enter the building to cool down the thermal mass of the building. This 'coolth' is stored and emitted during the day either totally negating or vastly reducing the requirement for mechanical ventilation (air con) which produces CO₂ into the environment. Thermal comfort is enhanced resulting in improved production and learning ability.

TC – Thermal Comfort

Measured in degrees C the temperature within a room space which should be kept within acceptable parameters of comfort for the occupants. Any control system should be adaptive and recognise the interaction between TC, IAQ and Energy Efficiency. SE Controls NV LogiQ range contains intelligent and proven control strategies to achieve this developed in conjunction with leading academic partners and associations.

0-10v Signal

A common signal received from a BMS to increment automated vent actuators. Control systems such as the SE Controls range will receive the 0-10v signal and position the vent accordingly in 10% increments. This is more accurate than a volt free signal which is mentioned in the general section.

GENERAL

CE Marking

Mandatory conformity mark for products placed on the market in the European Economic Area.

Construction Products Regulation (2013) (CPR)

Replaces the Construction Products Directive. It will be mandatory for products within the scope of harmonised European Standards (hENs), to carry CE marking if they are to be placed on the UK market.

EN60335-2-103 2003

This is a European standard that requires automated products such as windows to be assessed for entrapment risk if they are located below 2.5m from FFL. After the risk assessment preventative measures such as reduced speed and force products are available plus motion sensor solutions are available. Control strategy methods however can also be utilised to negate the risk.

Volt Free Contact

A digital signal supplied by both fire alarm and BMS signals to either signal smoke vents to open/close or to increment vent opening positions.

This signal is received by the control system powering the vent actuators such as the SE Controls control panel range (see controls section).

Projects

TOP LEFT Olympic Velodrome

LOCATION: LONDON
ARCHITECTS: HOPKINS
MAIN CONTRACTORS: ISG
 200 AUTOMATED WINDOWS
 CONTROLLED BY OS2 CONTROLLERS

TOP RIGHT Evelyn Grace Academy

LOCATION: BRIXTON
ARCHITECTS: ZAHA HADID
MAIN CONTRACTORS: MACE
 250 AUTOMATED WINDOWS
 OPERATED BY OS2 CONTROLLERS

MIDDLE LEFT Featherstone Prison

LOCATION: WOLVERHAMPTON
ARCHITECTS: PICK EVERARD
MAIN CONTRACTORS: KIER
 400 AUTOMATED EN12101-2 VERTICAL
 AND SLOPING SMOKE VENTS, 15 POWERED
 EXTRACT FANS AND DAMPERS OPERATED
 BY MODULAR PSU CONTROLS (FIRE ALARM
 AND BMS INTERFACE) AND 415 FAN PANELS

CENTRE Woodcock Street

LOCATION: BIRMINGHAM
ARCHITECTS: ASSOCIATED ARCHITECTS
MAIN CONTRACTORS: THOMAS VALE
 300+ AUTOMATED FAÇADE AND ATRIA
 VENTS OPERATED BY OS2 CONTROLLERS

BOTTOM LEFT The Chips Building

LOCATION: MANCHESTER
ARCHITECTS: ALSOP ARCHITECTS
MAIN CONTRACTORS: URBAN SPLASH
 AUTOMATED SMOKE VENT AOVs
 OPERATED BY OS2 CONTROLLERS

BOTTOM 2ND FROM LEFT Parkview Green

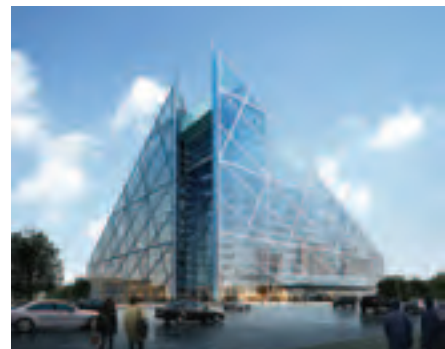
LOCATION: BEIJING
ARCHITECTS: IDA HONG KONG
MAIN CONTRACTORS: CHINA JIANGSU
 INTERNATIONAL CONSTRUCTION
 4500+ CHAIN ACTUATORS TO FAÇADE
 OPERATED BY 330+ CONTROLLERS

BOTTOM 3RD FROM LEFT Cruise Terminal

LOCATION: HONG KONG
ARCHITECTS: FOSTER + PARTNERS
MAIN CONTRACTORS:
 DRAGAGES HONG KONG
 2000+ LINEAR ACTUATORS TO SLOPING
 AND VERTICAL VENTS, 3000+ LOCKING
 MOTORS AND CONTROLS

BOTTOM RIGHT Salford Royal Hospital

LOCATION: MANCHESTER
ARCHITECTS: HKS
MAIN CONTRACTORS: BALFOUR BEATTY
 AUTOMATED SMOKE VENT AOVs, SHEVTEC
 LOUVRES AND EN12101-2 ROOF VENTS
 OPERATED BY MODULAR PSU CONTROLS





Services

SE CONTROLS OPERATE REGIONAL DELIVERY TEAMS OFFERING UNRIVALED SERVICE TO IT'S CUSTOMERS.

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3. Business Development / Key account management
4. Installation

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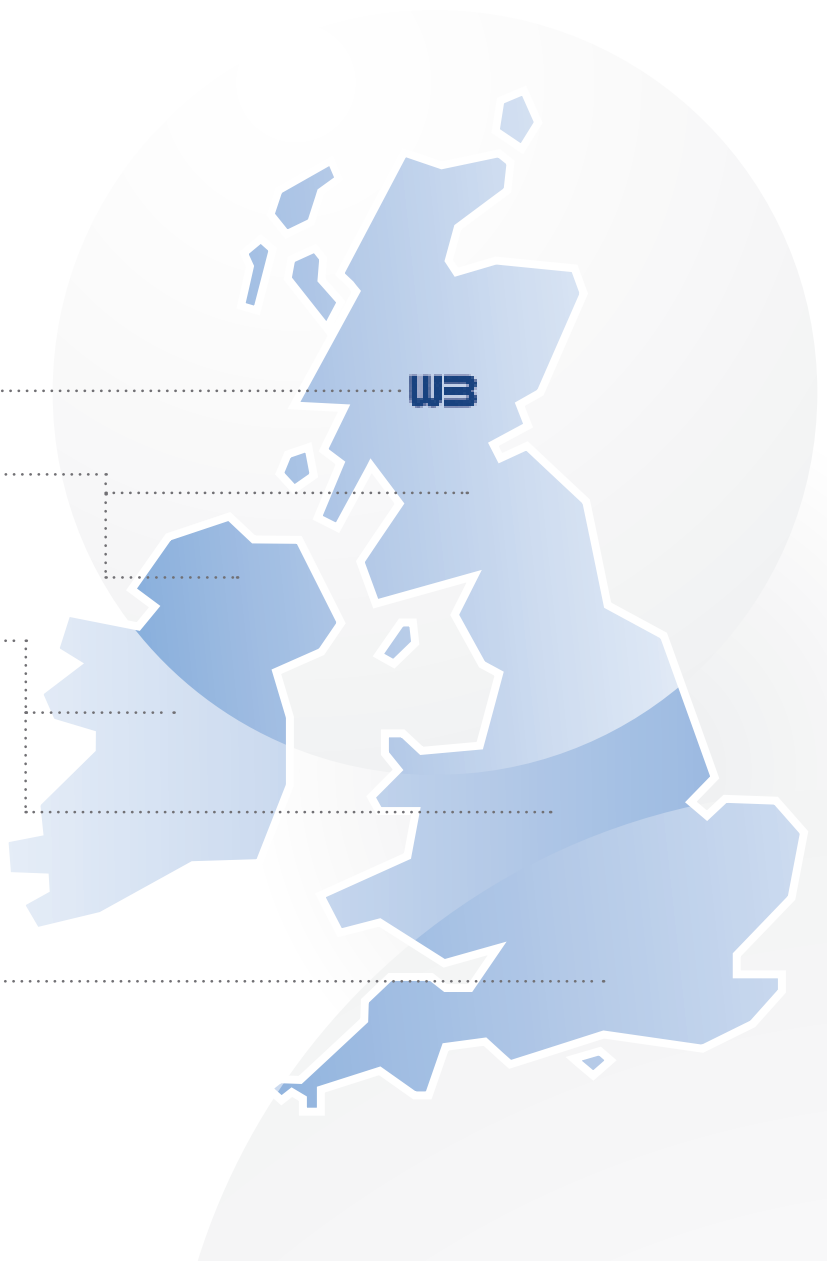
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3. Business Development / Key account management
4. Installation

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1. Technical sales estimating
2. Project Management
3. Business Development / Key account management
4. Installation



CAD & DESIGN SERVICES

SE Controls have strong relationships with most leading system companies and are capable of producing bespoke CAD details of the actuators for approval and fabrication.

An in house team is available to provide this service plus design suitable bracketary where required.



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