

SHUTTERS TECHNICAL GUIDE



BUILT-ON SECURITY SHUTTERS TECHNICAL GUIDE



PROPERTY PROTECTION SYSTEMS

Commercial

Retail

Counter & Cabinet

Domestic

Built-On Security Shutters Technical Guide

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INTRODUCTION

Our product range has been developed in Britain to provide an architecturally acceptable answer to the growing demand for vandalism and burglary protection on domestic, commercial and retail properties.



The range of products are compliant with the latest European product directives and standards including BSEN 13241-1 applicable from the 1st May 2005.

The uniquely neat finish of the range of security window shutters is particularly evident when they are built-on to an existing building with compact aluminium boxes, styled to minimise their visual impact.

The slimline finish makes internal fitting of window shutters a frequent choice. Our continuous programme of product development has produced a compact shutter of exceptional strength for small to medium size apertures.

Installations nationally protect windows and doors on city centre, suburban and rural homes, offices, factories, sports centres, medical premises, schools, community centres, computer rooms and golf clubs. In short, any building where security is a concern.

OPERATION

Swivel/geared belt Shutters are raised and lowered from inside by a belt. Depending upon shutter size the belt is operated manually or by geared crank handle. This is a lower security option.

Rod crank Shutters are raised and lowered from inside by a geared rod crank winding handle which hangs down vertically underneath the box and secures on a clip when not in use.

Spring loaded For external operation on exit doors, shutters can be spring loaded with a transverse key lock in the bottom slat. Also a popular option for bar, servery, counter, cabinet and kiosk applications. (N.B. The bottom slat projects below the shutter when fully raised, check that this will not obstruct outward opening doors)

Electric Motors are required on larger shutters and are optional on smaller shutters. Tubular motors fit inside the axle and require a 3 amp fuse. Operation is by rocker switch, key switch or remote control. A manual override can be specified to operate from inside. Where desirable a manual override can also be engaged through the outside of an externally fitted shutter box. Under these circumstances a lockable override cover is available as an optional extra to maximise security. Multi-shutter electric installations can be wired to operate from a central or group switches. Ask for further details. Care should be taken to ensure that such installations are in line with current Health and Safety legislation.



Users must be instructed to operate electric shutters with care, particularly when lowering. Check that the shutter operates smoothly when lowering, do not leave running unattended. If the shutter does not start to descend immediately or falters during operation, stop at once, reverse the shutter and try again. If the problem persists the shutter must be checked by an engineer. If an electric shutter is left to run unattended and damage occurs to the shutter any guarantee is void. Clear instruction must be given to users on the manual override winding direction to raise the shutter. Winding the shutter downwards beyond the normal stop point will damage the shutter.

Power Requirement

A Shutter up to 5sqm/50kg typically draws 1.1A/240W

A Shutter up to 10sqm/100kg typically draws 1.5A/320W



Thermal Cut Out Switch Tubular motors have a thermal cut out to prevent overheating after approximately four minutes of continuous running. This may cut in while setting limit switches; wait 15-30 minutes then restart the motor.

CE Marking All power-operated shutters are supplied with full CE marking documentation to assist in compliance with:
The Supply of Machinery (Safety) Regulations 1992
The Health and Safety at Work Act 1974



FINISH The shutter box, guide rail and bottom slat are typically powder coated in white or dark brown as standard. The shutter slats come in a variety of colours depending on the product. Please refer to the table opposite for more details. Standard R.A.L. or BS colours are also available at a surcharge on most products.

SIZING All shutters are individually made to customers sizes and specifications to maximise security. Maximum sizes may alter depending upon the application, wind loading or whether installed as a secondary or sole opening closure.

MAINTENANCE Window shutters primarily require keeping clean, particularly on city centre or coastal installations. Commercial installations should have a maintenance check every year. The guarantee period on all shutters is 18 months and covers replacement parts only. External key operated locks require frequent lubrication (light grade SAE oil).

PERFORMANCE

Security A locking device operates automatically when the shutter is fully lowered. Spring assisted shutters are fitted with a key lock fitted centrally in the bottom slat. Burglary resistance can be further enhanced by the use of bullet locks (see page 7). Reinforcing angle on the cill for the shutter to sit down behind is recommended on wide or vulnerable installations. Extruded slats are utilised for optimum security.

Shading/blackout Shutters can be stopped at any point to be used for shading (with the exception of spring operated shutters). This is enhanced by the optional light slits on the foam filled RA2 slats. When the shutter is fully closed it is effectively a blackout blind.

Thermal and acoustic conductivity The K value of a double glazed window fitted with a foam filled shutter is further improved by 35% from 1.8 to 2.6 w/m² K. The improvement is virtually the same with an extruded slat. These products can also be used to reduce unwanted background noise.

INSTALLATION/SUPPLY Detailed installation instructions are available for each shutter type; installation and supply are carried out by approved installers.

INSTALLATION OPTIONS The shutter can be installed around the reveal or in the reveal, internally or externally, depending on the window/door configuration and client preference. The following pages detail the sizing and layout options for each type of built-on shutter operation. Each has technical advantages and

Built-On Security - Typical Arrangements

GENERAL ARRANGEMENT

Shutter box The shutter coil is completely encased in a two piece, roll formed aluminium box, available in a range of six sizes according to the shutter height and slat type. The box is styled with a 45° chamfer to minimise the visual impact. On large electric operation shutters which require a manual override, the box extends beyond the width of the guides to accommodate the override mechanism on the drive side (see page 4).

Lugs at each end of the box locate into the box section of the guide rail.

Shutter slats A range of profiles is available dependent upon the security and/or vision requirement.

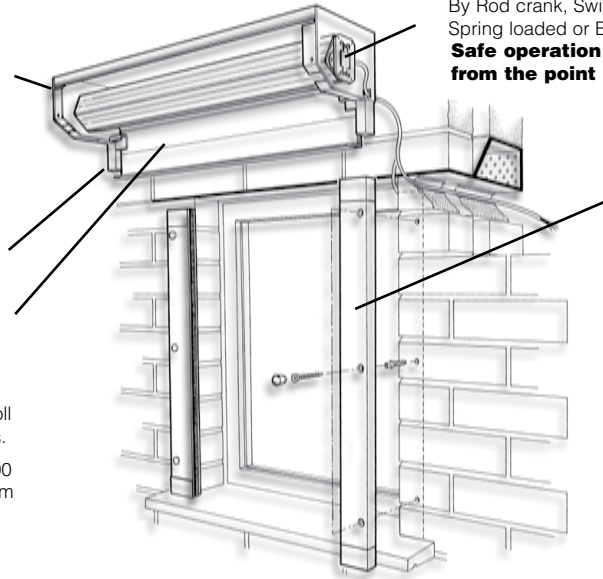
Aluminium shutters Available in extruded aluminium in single and twin wall profiles and roll formed in twin wall foam insulation filled profiles.

Steel shutters The SeceuroShield/Vision 7500 is a single wall profile in 22swg steel. The bottom slat further allows for tailoring of security level.

Operation

By Rod crank, Swivel/geared belt, Spring loaded or Electric (shown)

Safe operation of shutters which are not visible from the point of operation must be considered.

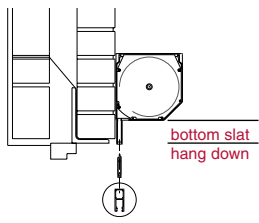


Guide rails

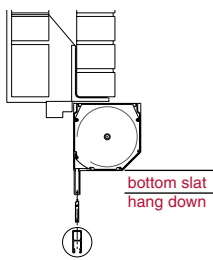
Constructed from extruded aluminium with a brush pile or neoprene liner for quiet, smooth operation. The guide rail is strengthened by a box section which also provides a separate fixing position and allows the shutter box to locate into. Size varies with slat type, shutter size and level of security. For locations with high security risk areas or high wind loading a windlock guide is available for some slat types.

HEAD DETAILS

Typical arrangement shown



The bottom slat hangs down from the bottom of the shutter box when the curtain is fully raised. For exact distance, see appropriate bottom slat profile section. In some cases the positioning of the shutter box can be set higher to ensure a clear opening, dependant upon the position of the lintel.

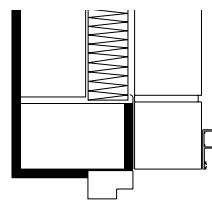


Detail: Built-On External Face Fix

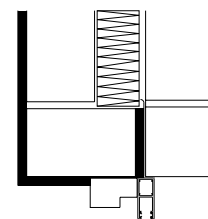
Detail: Built-On External Reveal Fix

Detail: Built-On Internal Reveal Fix

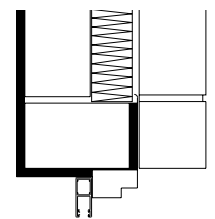
JAMB DETAILS



Detail: Built-On External Face Fix



Detail: Built-On External Reveal Fix



Detail: Built-On Internal Reveal Fix

GENERAL DETAILS

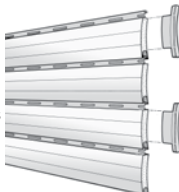
END LOCKS

Typical endlock arrangement

Extruded slats



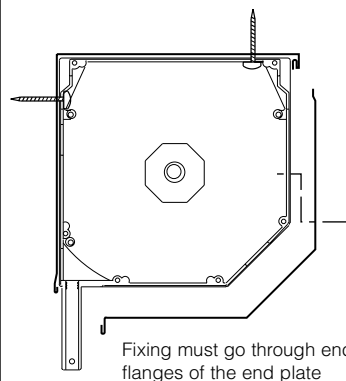
Foam filled slats



Secured by rivets, crimping or staples depending on slat size/type

SHUTTER BOX & 45° CANOPY

Detail: Box fixing showing optional 45° removable canopy

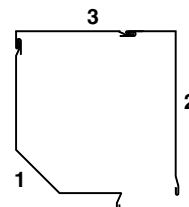


GUIDE FIXING



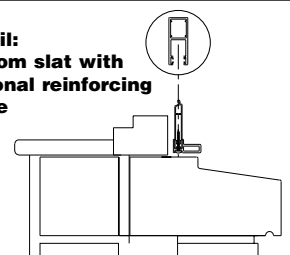
Detail: Guide reveal fixing **Detail: Guide face fixing**

Please note 350mm box will be supplied in three sections rather than two



BOTTOM SLAT DETAIL

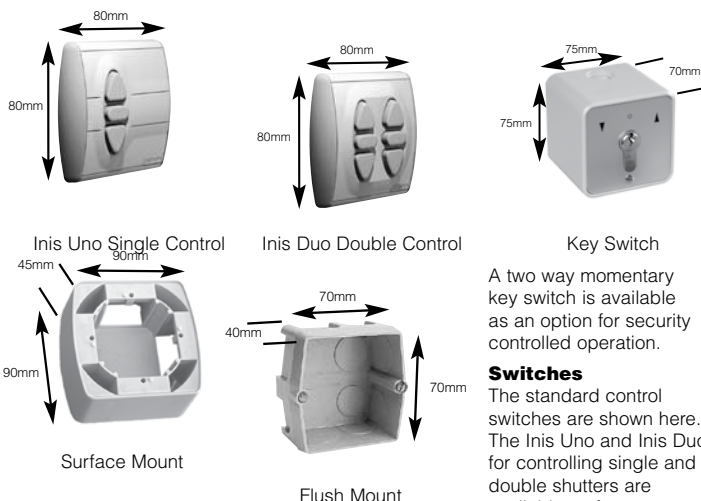
Detail: Bottom slat with optional reinforcing angle





AUTOMATION & CONTROLS

CONTROL SWITCHES



Key Switch
A two way momentary key switch is available as an option for security controlled operation.

Switches
The standard control switches are shown here. The Inis Uno and Inis Duo for controlling single and double shutters are available surface mounted as standard with an option for flush mounting. Switches are supplied "hold to run" for safety, as standard.

Group Command

For controlling up to 4 shutters a group command unit is required. The units can be linked together to control any number of shutters from a single master switch, still giving the option of individual switching if required.



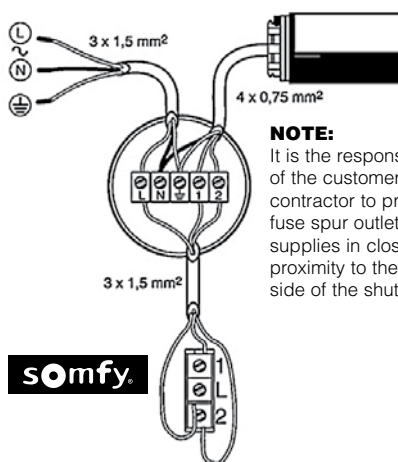
Remote Control

The third generation SeceuroSmart (RT) remote control system is fully compliant with all relevant European legislation. Supplied as standard from May 2005, this state-of-the-art unit is bristling with a host of additional features and benefits including:

- A wireless safety edge, which is fully compliant to BS EN 12453, replaces the safety photo-cell and reduces alignment problems and call-backs.
- Individual open, stop and close buttons mounted externally on the receiver for easy operation.
- A three colour LED on the unit indicates the door's current position and direction of travel.
- The remote control receiver monitors the motor's performance enabling it to detect an engaged manual locking device, if an object is jammed in the guide rails or curtain coil or if an individual is being lifted by the door. In these instances the door will automatically be stopped and the three colour LED on the unit will flash the appropriate system status signal.
- The unit can detect when a motor's thermal trip has been activated due to the motor overheating and will flash the appropriate system status signal using the three colour LED.
- If the safety edge is activated during use the door will automatically enter a hold to run mode enabling the door to still be operated whilst ensuring there is no compromise to the customer's safety.



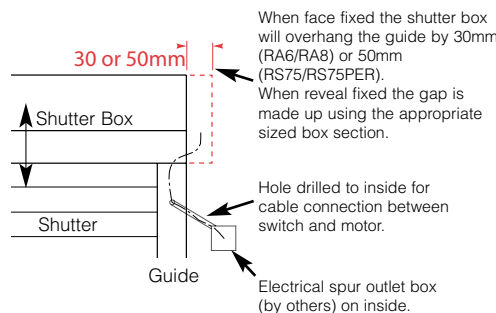
MOTOR WIRING



NOTE:
It is the responsibility of the customer / contractor to provide fuse spur outlet supplies in close proximity to the drive side of the shutter.

SHUTTER BOX EXTENSIONS

slat type	max area before box extension reqd (m ²)
SeceuroShield 6000	19
SeceuroVision 8000	18
SeceuroShield 7500	17
SeceuroVision 7500	21



COMPLIANCE WITH EUROPEAN DIRECTIVES AND STANDARDS

DGS products not only comply with all relevant UK & European legislation but have also received 3rd party certification from a UKAS accredited test house. This provides the reassurance that our claims of compliance have been verified by a credible independent organisation.

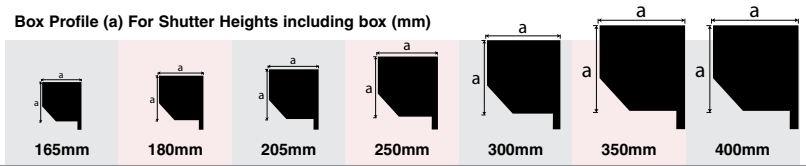
To ensure compliance the Construction Products Directive, DGS has undertaken the following work and implemented the following product changes:

- Ensure all externally fitted doors will withstand a minimum windload of Class 2 (Stormforce 10).
- Conduct cyclic durability test for all products to identify wear.
- Our standard remote control operation solution is now a fully compliant safety edge for all roller shutters rather than a photocell.
- Anti drop device on all doors / serveries above approximately 26kg.
- Anti drop spring on RA77 and built-in electric shutters where applicable.
- Double springing on all spring loaded doorway shutters between approximately 26kg and 53kg.
- If an electric shutter is fitted on a doorway and it is the only point of exit, our low level override has now been adapted so it can also be used internally for escape.

Built-On Shutters - Electric Operation

† The maximum area for a given slat design is NOT a product of maximum width x maximum height. Please check your shutter size against the maximum area limit.

Box Profile (a) For Shutter Heights including box (mm)



	Concave Face	Convex Face	Sizing Data †	165mm	180mm	205mm	250mm	300mm	350mm	400mm
RA401 Insurance Approved Security Shutters			Min Width 900mm Max Width 3000mm Max Height 4000mm Max Area 12sqm	1000 - 1600	1601 - 1900	1901 - 2800	2801 - 4000			
RA4 PUN See-Through Shutters Punched/Glazed 45% Vision			Min Width 750mm Max Width 3000mm Max Height 5000mm Max Area 12sqm	1000 - 1600	1601 - 1900	1901 - 2800	2801 - 5000			
RA4 PERF See-Through Shutters Perforated 17% Vision			Min Width 750mm Max Width 3000mm Max Height 5000mm Max Area 12sqm	1000 - 1600	1601 - 1900	1901 - 2800	2801 - 5000			
RS75 PER See-Through Shutters Perforated 25% Vision			Min Width 1000mm Max Width 6000mm Max Height 4700mm Max Area 20sqm							
RA8 See-Through Shutters Punched & Glazed 62% Vision			Min Width 900mm Max Width 6000mm Max Height 5000mm Max Area 20sqm				1000 - 1800	1801 - 3200	3201 - 5000	
RA9 See-Through Roller Grille 55/69% Vision			Min width 900mm Max Width 5000mm Max Height 4000mm Max Area 16sqm			1000 - 1600	1601 - 2800	2801 - 4000		
RA2 Built-On Security Shutters			Min Width 750mm Max Width 3400mm Max Height 4000mm Max Area 8sqm	1000 - 1600	1601 - 2000	2001 - 2800	2801 - 4000			
RA4 Built-On Security Shutters			Min Width 750mm Max Width 4000mm Max Height 5000mm Max Area 12sqm	1000 - 1600	1601 - 1900	1901 - 2800	2801 - 5000			
RA6 Built-On Security Shutters			Min Width 1000mm Max Width 6000mm Max Height 5000mm Max Area 20sqm			1000 - 1800	1801 - 2800	2801 - 4200	4201 - 5000	
RS75 Built-On Security Shutters			Min Width 1000mm Max Height 6000mm Max Height 4700mm Max Area 20sqm							
RA77 Built-On Security Shutters			Min Width 900mm Max Width 5400mm Max Height 4000mm Max Area 16sqm				1000 - 2000	2001 - 2800	2801 - 4000	

* Figures in red denote reverse coil heights for a given box size. 7500 Slat Standard coil Shutters coil with the concave side facing the barrel. 7500 slats are also able to coil in reverse (convex side facing the barrel) allowing the preferred visible external face to be selected irrespective of shutter fixing position. Reverse coiling increases the coil size – see box size data for a given height.

** Please note the maximum sizes quoted for SeceuroVision 7500 and SeceuroShield 7500 are applicable to the traditional design style shutter with galvanised steel channels and head box. These products are also available as Continental design shutters with aluminium head box and guide rails. The maximum sizes for the Continental style are as follows: Maximum width 6000mm, maximum height 3400mm and maximum area 15sqm.

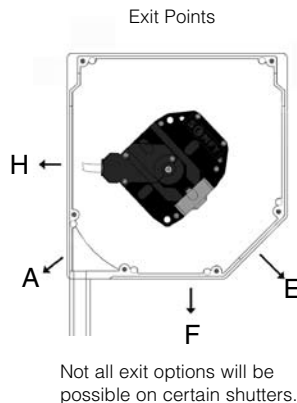
Please note 350mm box will be supplied in three sections rather than two, see page 3 for further details.

MANUAL OVERRIDE

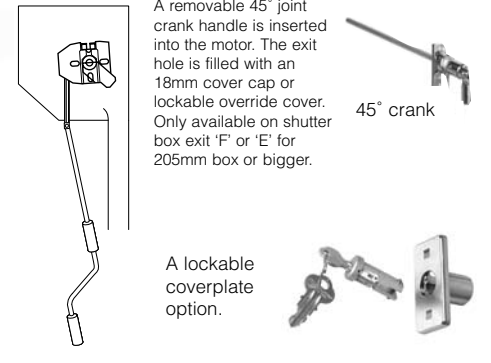
MANUAL OVERRIDE FACILITY

If a manual override is required for use in the event of power failure this must be specified at the time of ordering. There is a choice of technical solutions for the handle mechanism which operates the override, principally dependent upon whether the shutter is installed internally or externally and whether the override is to operate from inside or outside the building. Override locks and the low level external override are available at a surcharge. All specifications refer to a 205mm box or larger. When a shutter is installed over an exit which would be the only means of an escape in an emergency, it is a legal requirement to install an override on the inside. The latest generation of low level external overrides can now be operated from both the inside and outside to satisfy this legal requirement.

USE OF MANUAL OVERRIDE SHUTTERS:
Clear instruction must be given to users on the manual override winding direction to raise the shutter. Winding the shutter downwards beyond the normal stop point will damage the shutter.



Externally fitted shutter with external override



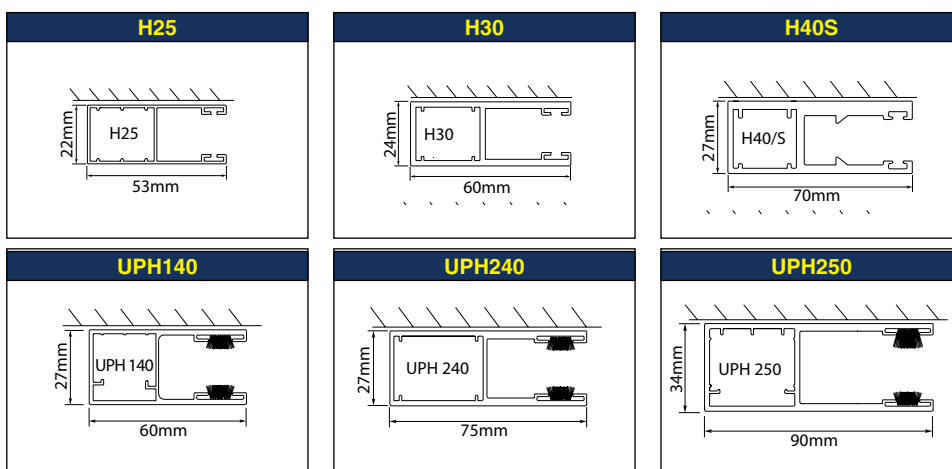


Decor-Grille
Security

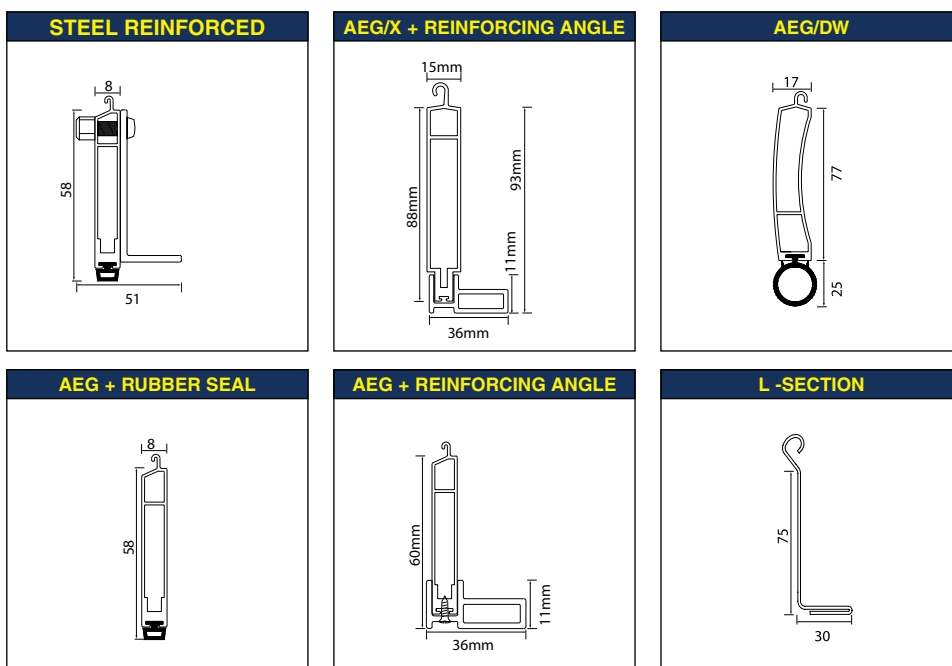
Guide Profiles S = Standard O = Option

HIGH SECURITY					Bottom Slat
					Standard
	S				Steel Reinforced
O	S	O			AEG + Reinforcing Angle
O	S	O			AEG + Reinforcing Angle
				S	L Section
				S	AEG/DW
		S	S	O	AEG/X + Reinforcing Angle
		205 box	250/300/350 box	250/300/350 box	
S	O	O			AEG
O	S	O			AEG + Reinforcing Angle
		S	S	O	AEG/X + Reinforcing Angle
		205 box	250/300/350 box	250/300/350 box	
				S	L Section
				S	AEG/DW

GUIDE PROFILES

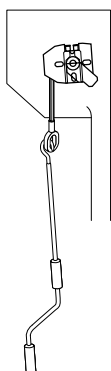


BOTTOM SLAT PROFILES



Externally fitted shutter with internal override

A permanently installed internal handle can often be specified subject to final survey and dependent on the construction of the building specification. Specification and installation details are the same as for rod crank operation on page 9 figure '2' or '3'.



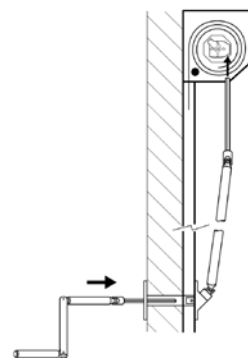
Internally fitted shutter with internal override



A fixed eye can be supplied at shutter box exit 'F' with a removable hooked handle of 1100mm as standard - see section on Crank Operation (page 9) for detail.

Alternatively a fixed 45° joint crank handle can be supplied at box exit 'E' or 'F' (similar to figure '1' page 9).

Internally fitted shutter with external override



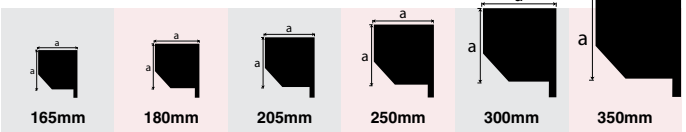
The low level external override (exit F) is operated by unlocking the override cover plate and inserting the winding handle.

Built-On Shutters - Spring Assisted

2800 mm is our maximum recommended height for spring assisted shutters to ensure safe and appropriate operation.

† The maximum area for a given slat design is NOT a product of maximum width x maximum height. Please check your shutter size against the maximum area limit.

Box Profile (a) For Shutter Heights including box (mm)



	Concave Face	Convex Face	Sizing Data †	165mm	180mm	205mm	250mm	300mm	350mm
RA4PUN See-Through Shutters Punched/Glazed 45% Vision			Min Width 755mm Max Width 3000mm Max Area 9sqm	1000 - 1600	1601 - 1900	1901 - 2800			
RA4PER See-Through Shutters Perforated 17% Vision			Min Width 755mm Max Width 3000mm Max Area 9sqm	1000 - 1600	1601 - 1900	1901 - 2800			
RS75PER See-Through Shutters Perforated 25% Vision			Min Width 900mm Max Width 4000mm Max Area 10sqm				* 1000 - 2000 1000 - 1200	2001 - 2800 1201 - 2500	2501 - 2800 ●
RA8 See-Through Shutters Punched & Glazed 62% Vision			Min Width 755mm Max Width 4000mm Max Area 8sqm				1000 - 1800	1810 - 2800	
RA9 See-Through Roller Grille 55/69% Vision			Min Width 755mm Max Width 4600mm Max Area 8sqm			1000 - 1600	1610 - 2800		
RA2 Built-On Security Shutters			Min Width 755mm Max Width 3400mm Max Area 6sqm	800 - 1600	1601 - 2000	2001 - 2800			
RA4 Built-On Security Shutters			Min Width 755mm Max Width 4000mm Max Area 7sqm	1000 - 1600	1601 - 1900	1901 - 2800			
RA6 Built-On Security Shutters			Min Width 755mm Max Width 4000mm Max Area 8sqm			1000 - 1800	1801 - 2800		
RS75 Built-On Security Shutters			Min Width 900mm Max Width 4000mm Max Area 12sqm				* 1000 - 2000 1000 - 1200	2001 - 2800 1201 - 2500	2501 - 2800 ●
RA77 Built-On Security Shutters			Min Width 900mm Max Width 4000mm Max Area 12sqm				1000 - 2000	2001 - 2800	

● Heights marked with a red dot are for boxes able to accommodate larger heights but are purposely restricted by our recommendation.

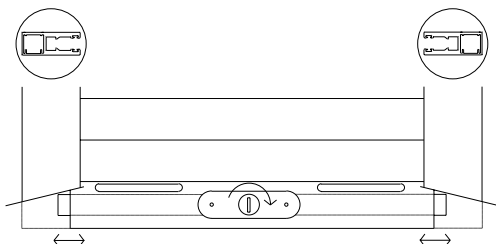
* Figures in red denote reverse coil heights for a given box size. 75 Slat Standard Coil Shutters coil with the concave side facing the barrel. 75 slats are also able to coil in reverse (convex side facing the barrel) allowing the preferred visible external face to be selected irrespective of shutter fixing position. Reverse coiling increases the coil size – see box size data for a given height.

Please note 350mm box will be supplied in three sections rather than two see page 3 for further details.

LOCKING

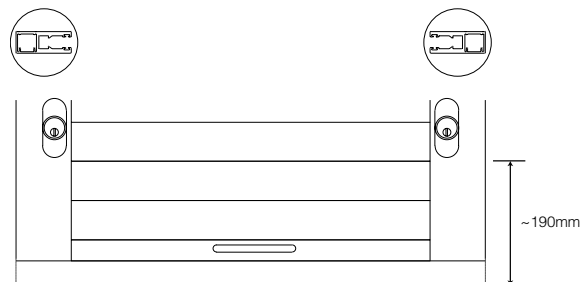
Bottom slat key lock

Spring loaded shutters include a transverse lock which is operable from both sides, fitted into the bottom slat as standard. The central key throws out locking bars which locate into the box section of the guide rail at each side. The shutter must be held in the closed position against the springing to engage the locks. Handles are supplied to assist operation - one or two are supplied dependent upon shutter size. Non locking shoot bolts are available as an option.



Bullet locks

Bullet locks are available. The locks go through the the guide and slat. Shown is an elevation from outside with the shutter closing down behind optional angle. Bullet locks are only available with H40S, UPH 240 and UPH 250 guide profiles.



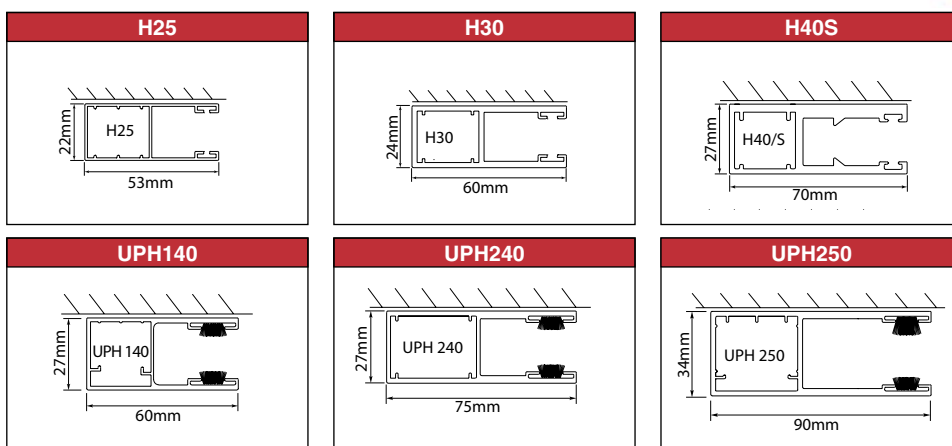


Decor-Grille Security

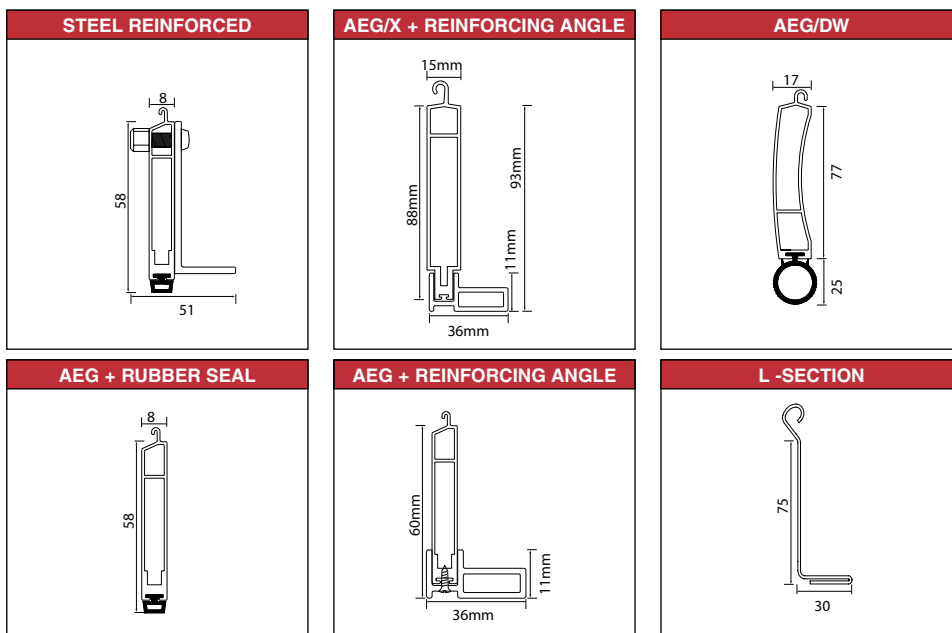
Guide Profiles S = Standard O = Option

HIGH SECURITY					Bottom Slat
					Standard
O	S	O			AEG + Reinforcing Angle
O	S	O			AEG + Reinforcing Angle
				S	L Section
				S	AEG/DW
			S 205 box	S 250/ 300/ 350 box	AEG/X + Reinforcing Angle
S	O	O			AEG
S	O	O			AEG + Reinforcing Angle
			S 205 box	O 250/ 300/ 350 box	AEG/X + Reinforcing Angle
				S	L Section
				S	AEG/DW

GUIDE PROFILES



BOTTOM SLAT PROFILES



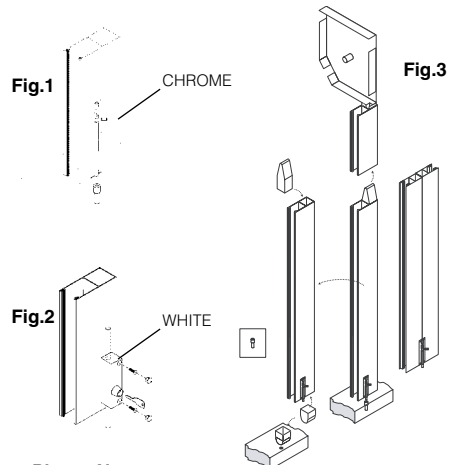
REMOVABLE GUIDES

For large spans and corners typically found on bars and counters



Removable Centre Rails

Appropriate on bar and servry applications with 2+ shutters where the opening needs to be clear. The top of each removable guide rail locates into a matching 70mm length which is permanently fixed to its end plate during manufacture (Fig.3). The bottom of each rail is secured using a chrome bolt which is supplied loose along with a recessed 40mm socket and dust cap (fig.1) or by using a white lockable bolt (fig.2). One bolt per pair of removable guide rails. Shutters with removable guide rails and a curtain weight of 40kg or more will be supplied with steel end plates.



Please Note:

when a pair of removable centre rails are required they will be fastened together by SWS during manufacture and supplied with one loose bolt to be attached on site.

Built-On Shutters - Rod Crank Operation

See previous section for guide and bottom slat details

2800 mm is our maximum recommended height for rod crank shutters due to the length of time taken to wind up and down.

⊕ The maximum area for a given slat design is NOT a product of maximum width x maximum height. Please check your shutter size against the maximum area limit.

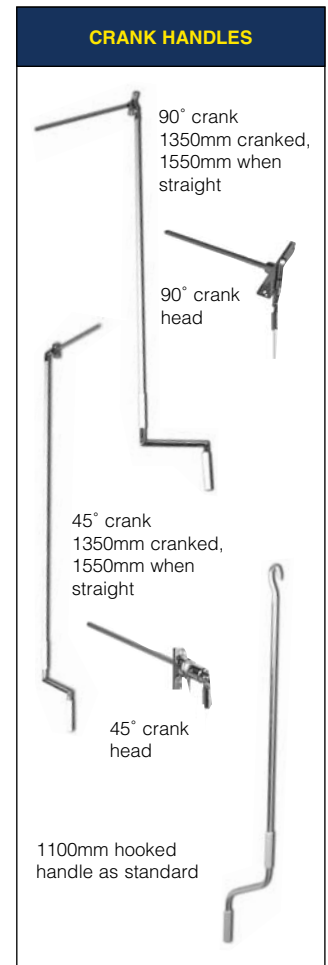
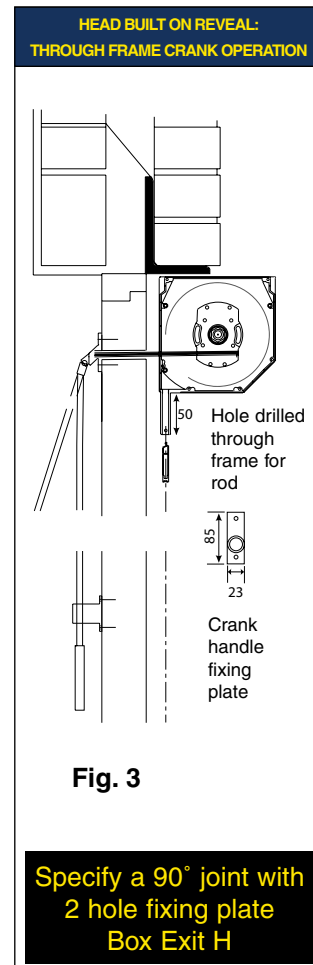
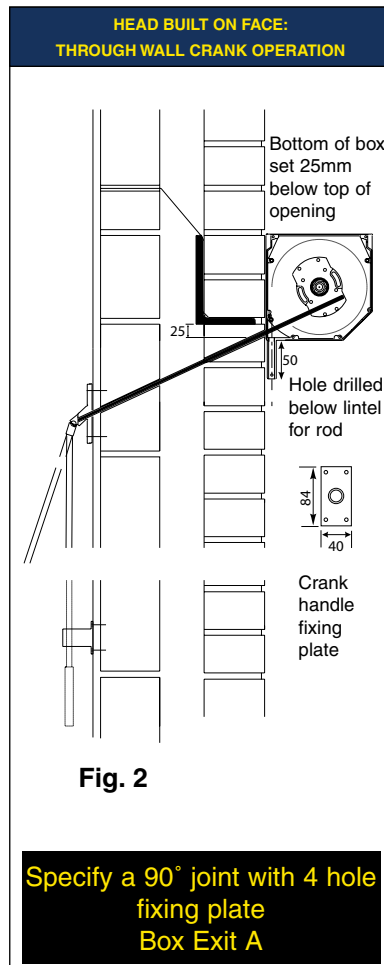
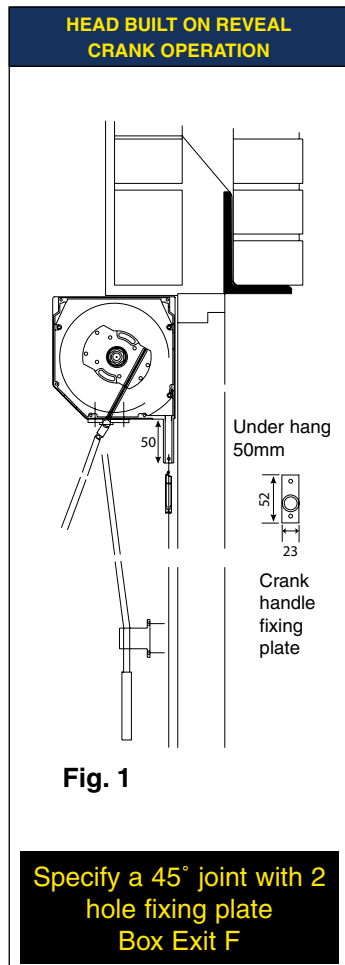
Guide Profiles

S = Standard O = Option

Bottom Slat

	Concave Face	Convex Face	Sizing Data ⊕	Box Profile For Shutter Heights including box (mm)				Guide Profiles			Bottom Slat
				165mm	180mm	205mm	250mm		H40S	Standard	
RA4PUN See-Through Shutters Punched/Glazed 45% Vision			Min Width 500mm Max Width 3000mm Max Area 4.5sqm	1000 - 1600	1601 - 1900	1901 - 2800		O	S	O	AEG
RA4PER See-Through Shutters Perforated 17% Vision			Min Width 500mm Max Width 3000mm Max Area 4.5sqm	1000 - 1600	1601 - 1900	1901 - 2800		O	S	O	AEG
RA2 Built-On Security Shutters			Min Width 500mm Max Width 3400mm Max Area 6.5sqm	800 - 1600	1601 - 2000	2001 - 2800		S	O		AEG
RA4 Built-On Security Shutters			Min Width 500mm Max Width 4000mm Max Area 3.5sqm	1000 - 1600	1601 - 1900	1901 - 2800		O	S	O	AEG

● Heights marked with a red dot are for boxes able to accommodate larger heights but are restricted by the operating speed of the gearing to 2800mm.



Built-On Shutters - Belt Operation



Decor-Grille Security

See previous section for guide and bottom slat details

SWIVEL WINDER

	Concave Face	Convex Face	Sizing Data †	Box Profile For Shutter Heights including box (mm)			Guide Profiles			
				165mm	180mm	205mm	H25	H30	H40S	Standard
RA4PUN See-Through Shutters Punched/Glazed 45% Vision			Min width 500mm Max width 1900mm Max height 1800mm Max Area 2.3sqm	1000 - 1600	1601 - 1800	●	O	S	O	AEG
RA4PER See-Through Shutters Perforated 17% Vision			Min width 500mm Max width 1900mm Max height 1800mm Max Area 2.3sqm	1000 - 1600	1601 - 1800	●	O	S	O	AEG
RA2 Built-On Security Shutters			Min width 500mm Max width 3400mm Max height 2800mm Max Area 3.3sqm	1000 - 1600	1001 - 2000	2001 - 2800	S	O		AEG
RA4 Built-On Security Shutters			Min width 500mm Max width 1900mm Max height 1800mm Max Area 2sqm	1000 - 1600	1601 - 1800	●	O	S	O	AEG

† The maximum area for a given slat design is NOT a product of maximum width x maximum height. Please check your shutter size against the maximum area limit.

GEARED WINDER

RA4PUN See-Through Shutters Punched/Glazed 45% Vision			Min width 500mm Max width 2800mm Max height 2800mm Max Area 3.8sqm	1000 - 1600	1601 - 1900	1901 - 2800	O	S	O	AEG
RA4PER See-Through Shutters Perforated 17% Vision			Min width 500mm Max width 2800mm Max height 2800mm Max Area 3.8sqm	1000 - 1600	1601 - 1900	1901 - 2800	O	S	O	AEG
RA2 Built-On Security Shutters			Min width 500mm Max width 3400mm Max height 2800mm Max Area 5.5sqm	800 - 1600	1601 - 2000	2010 - 2800	S	O		AEG
RA4 Built-On Security Shutters			Min Width 500mm Max Width 2800mm Max Height 2800mm Max Area 3sqm	1000 - 1600	1601 - 1900	1901 - 2800	O	S	O	AEG

● Heights marked with a red dot are for boxes able to accommodate larger heights but are restricted by shutter weight.

