

Centor F3 Bottom-Rolling System for Folding Doors



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$\bigcirc$	Making Impressions	1
ONI	Bottom-Rolling Freedom	2
NTENTS	Centor-Grade Performance	4
05	F3 Up Close	5
	F3 Assurance	6
	F3 Product Details	7
	Architectural Detail	
	Component Selection	
	Hardware Selection	13
	Dropbolts	
	Door Size Calculator	
	Common Panel layouts	
	Surelock II™ Adjustment	

## CENTOR REVOLUTIONISED THE WAY FOLDING WINDOWS & DOORS MOVE



MAKING IMPRESSIONS

Centor Architectural opened a world of opportunity in building design when they revolutionised the way folding windows and doors move.

Delivering life-long durability and one touch movement, Centor guided folding windows and doors are making memorable impressions in homes, offices, restaurants and commercial premises all over the world.

The window of opportunity to use this technology has just become a whole lot wider as the company that revolutionised folding movement brings the technology to a much wider audience.





BOTTOM-ROLLING FREEDOM

F3 Specifications	
maximum opening	16000mm
maximum panel weight	80kg each
maximum panel width	1000mm
maximum panel height	2700mm
minimum door thickness	35mm
maximum number of doors	8 each direction

The new Centor F3 Bottom-Rolling System for Folding Doors is the industry's first comprehensive bottom-rolling hardware technology, putting folding doors and windows into any existing building space without major structural changes.

Bottom-rolling systems allow the weight of the door to be transferred away from the top of the opening, eliminating the need for a strong and often restricting upper beam – freeing up more design space.

## FLOOR ROLLING TECHNOLOGY ELIMINATES THE NEED FOR STRONG UPPER BEAMS



Centor F3 allows for the cost-effective remodel or retrofit of any opening that previously had a sliding door. Now everyone can enjoy the benefits of folding doors, combining the pleasures of a seamless indoor/outdoor lifestyle with fingertip operation. Folding doors provide vistas, natural light, fresh air and larger living space particularly when entertaining and unlike sliding doors, require no fixed glass panels or posts.

Centor F3 is based on simple but sophisticated technology using a range of strategically placed bearings to allow the bottom of the door to carry the weight, whilst remaining easy to maneuver. Unlike other bottom-rolling systems, Centor controlled windows and doors glide through tracks, not rails, with movement controlled by articulated carriers, appropriately sized wheels and side thrust bearings. With Centor's new bottom-rolling technology, quality folding doors and windows are within reach of every existing building and to every door and window manufacturer. The patented system installs with simple hand and power tools and requires no structural changes to the building.



CENTOR-GRADE PERFORMANCE

Internal environment, operational function, durability; painstaking attention to detail and an unerring commitment to quality mean 'Centor-grade' performance, whatever the category. The result is a degree of control and comfort for the end-user that matches the easy flexibility of modern design.

#### Rain and Wind

Centor hardware was utilised in the first tracked folding door system to be certified under Australian Standard AS2047, which specifies the weather performance required of external windows and sliding doors. Doors utilising the E3 and E4 systems have since been certified to stringent Miami-Dade County hurricane standards, the toughest testing anywhere in the world. With similar technology built into F3, impressive water performance ratings are achievable from both outward and inward opening doors. Driving rain and howing gales can be shut out.

#### Air Infiltration

The F3 system achieves its superior rain and wind resistance in part from the way it allows the folding doors to close snugly against weatherseals. In the same way, doors using F3 effectively resist air infiltration to a level up to 50 times better than a sliding door. All individual F3 components have been extensively laboratory tested, ensuring years of trouble-free use from hardware which ages with grace.

#### **Cyclic Testing**

F3 has undergone Centor's minimum requirement of cyclic testing to a grueling 35,000 cycles without failure at maximum configuration, however many individual components are rated to over 100,000 cycles.

#### **Corrosion Testing**

Stainless steel, PVD brass, anodised aluminium and engineering grade plastics are used throughout the F3 system with all materials carefully selected to maximise performance in any environment. Centor conducts regular corrosion testing in salt spray chamber, fixing hardware to various substrates to ensure that F3 will perform admirably even in the most exposed applications.

#### **Finite Element Analysis**

Finite Element Analysis (FEA) is a computerised simulation technique where products are exposed to virtual operating environments and accurate predictions made in terms of load and deflection. Centor undertakes FEA in the design process to ensure the best balance of performance, cost and materials in every system.

# FOLDING DOORS ARE NOW WITHIN REACH OF EVERY BUILDING



Drainage holes allow water & dust to flush away

Guards work like a snow plough to remove debris

F3 UP CLOSE

Even a casual glance at the F3 system gives a strong impression of Centor's commitment to quality, but it's only upon closer inspection that the attention to detail really becomes apparent. Stacked with standard features and with an abundance of options to choose from, Centor F3 looks even better up close.

#### Materials and Finishes

F3 carriers, guides, pivots and hinges are available in brushed stainless steel, PVD gold or PVD black finish over stainless steel and custom colours. Head tracks are produced in extruded aluminium with the option of clear or bronze anodised finishes with Meranti, New Guinea Rosewood, Surian Red Cedar and Western Red Cedar. Sills are produced in extruded aluminium with the option of clear or bronze anodised finishes with Kwila.

#### Panel Size and Materials

Centor's innovative hinge system enables the use of uniform width door panels regardless of the door configuration, ensuring maximum efficiency in door manufacture. Easily installed hardware can be teamed with door panels in timber, aluminium, PVC or fibreglass.

#### Adjustment

F3 folding doors can be adjusted both vertically and horizontally. Once door heights are set and locked, the mechanism will not self adjust or loosen over time, meaning doors will not drop. Further adjustments can be made at any time with a screwdriver.

#### **Design Features**

Openings fitted with Centor controlled folding windows and doors include protective features not available with other systems. These include:

- the original Centor weathersealed technology
- floating rollers allow for smooth action even with sill bow or twist
- sill covers to avoid dirt collecting in the tracks
- guards which work like a snow plough to remove any debris
- tapered rollers and sloping track facilitate debris removal
- drainage holes to flush away water and dust

## FULLY ADJUSTABLE COMPENSATING FOR LESS THAN PERFECT OPENINGS



F3 ASSURANCE

Delivering life-long durability and fingertip operation, the F3's breakthrough technology and comprehensive feature set solves the many challenges previously associated with bottom-rolling hardware systems.

#### **Unparalleled Security**

The new slimmer frames fit unobtrusively beneath glazed panels with fixed and irremovable adjustment pins providing maximum strength and security.

#### Specifying F3

For detailed component selection, including calculating size and number of door panels, specifiers can utilise Doorcalc, Centor's free specification and ordering software. Doorcalc is available from www.centor.com.au

Architects and designers can feel comfortable simply specifying 'Centor F3' and leave detailed component selection to the builder, joiner or fabricator.

#### Warranty

Centor F3 bottom-rolling folding doors and windows can continue to open and close as new, long past their 10 year guarantee.



## F3 PRODUCT DETAILS

Downloadable DXF or DWG files ready for use in your own documentation are a convenient resource for architects and specifiers wishing to use Centor systems.

F3 DXF or DWG files can be downloaded from www.centor.com.au



## ARCHITECTURAL DETAIL



## ARCHITECTURAL DETAIL





\*dimensions are nominal

## COMPONENT SELECTION

F3 is specified with 5 separate groups:

- 1 Head
- 2 **Sill**
- 3 Hardware
- 4 Weathersealing
- 5 Dropbolts

Components are required from all 5 groups to build an F3 folding door system.

### POLY CHANNEL

C\$25	2500mm straight top poly channel
C\$36	3600mm straight top poly channel
C\$42	4200mm straight top poly channel
C\$57	5700mm straight top poly channel
C	C\$42

#### HEAD WITH POLY CHANNEL

PART	PRODUCT CODE	DESCRIPTION
	FRAHS25N	2500mm head track with poly channel, clear anodised
	FRAHS25R	2500mm head track with poly channel, bronze anodised
	FRAHS36N	3600mm head track with poly channel, clear anodised
le di	FRAHS36R	3600mm head track with poly channel, bronze anodised
	FRAHS42N	4200mm head track with poly channel, clear anodised
	FRAHS42R	4200mm head track with poly channel, bronze anodised
	FRAHS57N	5700mm head track with poly channel, clear anodised
	FRAHS57R	5700mm head track with poly channel, bronze anodised

#### SILL WITH SEAL

PARTS	PRODUCT CODE	DESCRIPTION
	FRASS25N	2500mm sill with seal, clear anodised
	FRASS25R	2500mm sill with seal, bronze anodised
- E	FRASS36N	3600mm sill with seal, clear anodised
	FRASS36R	3600mm sill with seal, bronze anodised
	FRASS42N	4200mm sill with seal, clear anodised
	FRASS42R	4200mm sill with seal, bronze anodised
	FRASS57N	5700mm sill with seal, clear anodised
	FRASS57R	5700mm sill with seal, bronze anodised

## COMPONENT SELECTION

## HEAD – WITH TIMBER



PRODUCT CODE	DESCRIPTION
FRAH25NMER	2500mm head with timber, clear anodised with meranti
FRAH25NNGR	2500mm head with timber, clear anodised with new guinea rosewood
FRAH25NSRC	2500mm head with timber, clear anodised with surian red cedar
FRAH25NWRC	2500mm head with timber, clear anodised with western red cedar
FRAH25RMER	2500mm head with timber, bronze anodised with meranti
FRAH25RNGR	2500mm head with timber, bronze anodised with new guinea rosewood
FRAH25RSRC	2500mm head with timber, bronze anodised with surian red cedar
FRAH25RWRC	2500mm head with timber, bronze anodised with western red cedar
FRAH36NMER	3600mm head with timber, clear anodised with meranti
FRAH36NNGR	3600mm head with timber, clear anodised with new guinea rosewood
FRAH36NSRC	3600mm head with timber, clear anodised with surian red cedar
FRAH36NWRC	3600mm head with timber, clear anodised with western red cedar
FRAH36RMER	3600mm head with timber, bronze anodised with meranti
FRAH36RNGR	3600mm head with timber, bronze anodised with new guinea rosewood
FRAH36RSRC	3600mm head with timber, bronze anodised with surian red cedar
FRAH36RWRC	3600mm head with timber, bronze anodised with western red cedar
FRAH42NMER	4200mm head with timber, clear anodised with meranti
FRAH42NNGR	4200mm head with timber, clear anodised with new guinea rosewood
FRAH42NSRC	4200mm head with timber, clear anodised with surian red cedar
FRAH42NWRC	4200mm head with timber, clear anodised with western red cedar
FRAH42RMER	4200mm head with timber, bronze anodised with meranti
FRAH42RNGR	4200mm head with timber, bronze anodised with new guinea rosewood
FRAH42RSRC	4200mm head with timber, bronze anodised with surian red cedar
FRAH42RWRC	4200mm head with timber, bronze anodised with western red cedar
FRAH57NMER	5700mm head with timber, clear anodised with meranti
FRAH57NNGR	5700mm head with timber, clear anodised with new guinea rosewood
FRAH57NSRC	5700mm head with timber, clear anodised with surian red cedar
FRAH57NWRC	5700mm head with timber, clear anodised with western red cedar
FRAH57RMER	5700mm head with timber, bronze anodised with meranti
FRAH57RNGR	5700mm head with timber, bronze anodised with new guinea rosewood
FRAH57RSRC	5700mm head with timber, bronze anodised with surian red cedar
FRAH57RWRC	5700mm head with timber, bronze anodised with western red cedar

## COMPONENT SELECTION

### SILL – WITH TIMBER

PARTS	PRODUCT CODE	DESCRIPTION
	FRAS25NKWL	2500mm sill with timber, clear anodised with kwila
	FRAS25RKWL	2500mm sill with timber, bronze anodised with kwila
	FRAS36NKWL	3600mm sill with timber, clear anodised with kwila
	FRAS36RKWL	3600mm sill with timber, bronze anodised with kwila
	FRAS42NKWL	4200mm sill with timber, clear anodised with kwila
	FRAS42RKWL	4200mm sill with timber, bronze anodised with kwila
	FRAS57NKWL	5700mm sill with timber, clear anodised with kwila
	FRAS57RKWL	5700mm sill with timber, bronze anodised with kwila

## WEATHERSEAL

PRODUCT CODE	PART DESCRIPTION
AQ21B	Aquamac 21 Schlegel Kerf seal, brown
AQ21L	Aquamac 21 Schlegel Kerf seal, black
AQ21W	Aquamac 21 Schlegel Kerf seal, white
AQ63B	Aquamac 63 Schlegel Kerf seal, brown
AQ63L	Aquamac 63 Schlegel Kerf seal, black
AQ63W	Aquamac 63 Schlegel Kerf seal, white
AQ109B	Aquamac 109 Schlegel Kerf seal, brown
AQ109L	Aquamac 109 Schlegel Kerf seal, black
AQ109W	Aquamac 109 Schlegel Kerf seal, white
	AQ21B AQ21L AQ21W AQ63B AQ63L AQ63W AQ109B AQ109L

## SILL COVER

PARTS	PRODUCT CODE	DESCRIPTION
	FRBTS25	2500mm bottom track seal
	FRBTS36	3600mm bottom track seal
	FRBTS42	4200mm bottom track seal
	FRBTS57	5700mm bottom track seal
	FRBTS100	100m roll bottom track seal

#### **RIGHT CARRIER SET**



\* Longer lead times apply. Please contact Centor Architectural for details.

## LEFT CARRIER SET

PARTS	PARTS ON PANELS	PRODUCT CODE	DESCRIPTION
		F3LCSS	left hand carrier set, stainless steel
1		F3LCSTG	left hand carrier set, PVD gold
E	E .	F3LCSOL*	left hand carrier set, PVD black
Co.		F3LCSPC*	left hand carrier set, custom powdercoat
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## INTERMEDIATE CARRIER SET (FOURTH HINGE RECOMMENDED FOR DOORS OVER 2250MM)

a) intermediate carrier set

b) fourth hinge recommended for doors over 2250mm

#### HINGE SET



b) hinge set no handle for inward doors

\* Longer lead times apply. Please contact Centor Architectural for details.

#### SINGLE HINGE

PARTS	PRODUCT CODE	DESCRIPTION
	E3HNHS	single straight hinge, stainless steel
	E3HNHTG	single straight hinge, PVD gold
	E3HNHOL*	single straight hinge, PVD black
7	E3HNHPC*	single straight hinge, custom powdercoat

#### HALF OFFSET HINGE SET



b) half offset hinge set with no handle for inward doors

\* Longer lead times apply. Please contact Centor Architectural for details.

### SINGLE HALF OFFSET HINGE

PARTS	PRODUCT CODE	DESCRIPTION
	E3HHNHS	single half offset hinge, stainless steel
	E3HHNHTG	single half offset hinge, PVD gold
12	E3HHNHOL*	single half offset hinge, PVD black
5	E3HHNHPC*	single half offset hinge, custom powdercoat

#### **PIVOT SET - WALL PIVOT**



a) pivot set

b) jamb mounted middle wall pivot recommended for doors over 2250mm to central deflection and bowing

\* Longer lead times apply. Please contact Centor Architectural for details.

## EXTERNAL HANDLE

PARTS	PARTS ON PANELS	PRODUCT CODE	DESCRIPTION
	~	E3EHS	external handle, stainless steel
		E3EHTG	external handle, PVD gold
		E3EHOL*	external handle, PVD black
<b>U</b>	0	E3EHPC*	external handle, custom powdercoat
	-		
single hinge with handle for outward and	inward application		

# AVAILABLE IN A RANGE OF LENGTHS AND FINISHES

ENIOR DROFDOIL

Centor's stylish, flush-mounting dropbolts are the ideal solution for fastening or securing folding doors based on the F3 system. Easily installed with a dedicated router bit available from Centor, DF dropbolts are available in a range of lengths and finishes. Available keyed and non-keyed, DF dropbolts can be keyed alike and re-keyed by a locksmith.

#### Centor DF

Rated to resist the most extreme wind conditions (up to 450kg force in certain timbers) DF dropbolts feature rounded styling and are suited to use with outward opening folding doors. Available in 200mm, 400mm, 600mm and 1000mm lengths with a 20mm throw they come in clear and gold anodised, chrome, brushed metallic and custom powdercoated finishes. Keyed DF dropbolts feature a unique damage-proofing mechanism which prevents the bolt being operated while the key remains in the lock.



### DF – KEYED

PARTS	ARCHITECTURAL DETAIL	PRODUCT CODE	DESCRIPTION
		DBFO200KRN	200mm dropbolt, keyed, clear anodised
-	and the second s	DBFO200KRG	200mm dropbolt, keyed, gold anodised
		DBFO200KRX	200mm dropbolt, keyed, brushed metallic
		DBFO200KRL	200mm dropbolt, keyed, black powdercoat
63	0	DBFO200KRW	200mm dropbolt, keyed, white powdercoat
		DBFO200KRPC*	200mm dropbolt, keyed, custom powdercoat
	24	DBFO200KRC*	200mm dropbolt, keyed, chrome
		DBFO400KRN	400mm dropbolt, keyed, clear anodised
		DBFO400KRG	400mm dropbolt, keyed, gold anodised
		DBFO400KRX	400mm dropbolt, keyed, brushed metallic
		DBFO600KRN	600mm dropbolt, keyed, clear anodised
		DBFO600KRG	600mm dropbolt, keyed, gold anodised
		DBFO600KRX	600mm dropbolt, keyed, brushed metallic
		DBFO1000KRN	1000mm dropbolt, keyed, clear anodised
		DBFO1000KRX	1000mm dropbolt, keyed, brushed metallic

 $\star$  Longer lead times apply. Please contact Centor Architectural for details.

#### DF – NON-KEYED

PARTS	ARCHITECTURAL DETAIL	PRODUCT CODE	DESCRIPTION
		DBFO200NRN	200mm dropbolt, non-keyed, clear anodised
9	ATT -	DBFO200NRG	200mm dropbolt, non-keyed, gold anodised
		DBFO200NRX	200mm dropbolt, non-keyed, brushed metallic
		DBFO200NRL	200mm dropbolt, non-keyed, black powdercoat
4		DBFO200NRW	200mm dropbolt, non-keyed, white powdercoat
		DBFO200NRPC*	200mm dropbolt, non-keyed, custom powdercoat
	2.2	DBFO200NRC*	200mm dropbolt, non-keyed, chrome
		DBFO400NRN	400mm dropbolt, non-keyed, clear anodised
		DBFO400NRG	400mm dropbolt, non-keyed, gold anodised
		DBFO400NRX	400mm dropbolt, non-keyed, brushed metallic
		DBFO600NRN	600mm dropbolt, non-keyed, clear anodised
		DBFO600NRG	600mm dropbolt, non-keyed, gold anodised
		DBFO600NRX	600mm dropbolt, non-keyed, brushed metallic
		DBFO1000NRN	1000mm dropbolt, non-keyed, clear anodised
		DBFO1000NRX	1000mm dropbolt, non-keyed, brushed metallic

## DOOR SIZE CALCULATOR

To calculate the dimensions of the doors or openings we strongly recommend using Centor's "Doorcalc" program, which is a Microsoft Excel spreadsheet. To manually calculate door sizing for an opening, follow the following steps:

- 1 Prepare a basic sketch of your door opening (see worked example), to visualise clearances and check sizes.
- 2 The calculation is based on all panels being equal width, using half-offset hinges (Patent Pending). Note that the allowance between each panel is 4mm although hinge thickness is less this allowance has been determined by consultation with fabricators as the best approximation for calculation. Clearance between hinges and hinge pins, coupled with the pressure from compression seals accounts for the allowance being larger than the nominal hinge flap thickness.
- 3 Recommended clearances are as follows;

		Ν
	Panel width is:	$W = L - 14 - (4 \times (N - 1)) **$
	Total number of panels	Ν
	Opening width	L
4	Panel width	W
	<ul> <li>Bottom of panel to sill</li> </ul>	10 mm
	• Top of panel to head	10 mm
	Panel to panel (door closed)	4 mm
	<ul> <li>Jamb to panel (door closed)</li> </ul>	7 mm

### Worked Examples

Clear opening size 2425 high x 4200 wide (L), and a 3L x 2R arrangement.

W = 4200 - 14 - (4 x (5 - 1))

5

W = 834 mm

Check against your door layout:

L = 2(7.0) + 4(4) + 5(834) = 4200 (OK)

The panel height is the opening height less the nominal top and bottom clearances:

Panel Height H = 2425 - 5 - 10 = 2410mm



\*\* Note: for even sets, eg 2L2R or 4L2R, the meeting gap would be larger – double seals are used to close the gap.

 $W = L - 14 - (4 \times N)$ 

Ν

## COMMON PANEL LAYOUTS

HARDWARE LEGEND		
PS pivot set	HHS half offset hinge set	
WPS wall pivot set	HS hinge set (flat)	
ICS intermediate carrier set	EH external handle	
LCS left carrier set	DB dropbolt	
RCS right carrier set		

#### LEGEND

Passage set Handles / Lock sets

Dropbolts top and bottom



Note> Wall Pivot Set recommended for doors over 2250mm in height.

## FLOATING DOOR PAIRS



#### HARDWARE APPLICATION (3L2R)



#### **OUTWARD APPLICATION EXTERIOR HANDLE OPTIOI**



Use one exterior handle on exit door (outward system) where passage set / lock not required. Use dropbolts top and bottom to lock door from the inside only.

Note> Exit door not accessible from exterior in this application.

#### INWARD APPLICATION EXTERIOR HANDLE OPTION



Use one exterior handle on each pair of doors (inward system) to pull open and close doors

## COMMON PANEL LAYOUTS

CODE	OPENING CONFIGURATION	HARDWARE
2L	inside WPS, PS not accessible from exterior outside RCS HS	1 x pivot set 1 x wall pivot set* 1 x right carrier set 1 x hinge set 2 x dropbolt
2L1R	inside WPS, PS WPS, PS outside RCS	2 x pivot set 2 x wall pivot set* 1 x right carrier set 1 x hinge set 2 x dropbolt
3L	inside WPS, PS ICS outside	1 x pivot set 1 x wall pivot set* 1 x intermediate carrier set 1 x half offset hinge set 2 x dropbott
BLIR	inside WPS, PS ICS WPS, PS outside	2 x pivot set 2 x wall pivot set* 1 x intermediate carrier set 1 x half offset hinge set 4 x dropbott
4L	inside WPS, PS ICS RCS not accessible from exterior outside HHS HHS	1 x pivot set 1 x wall pivot set* 1 x intermediate carrier set 1 x right carrier set 2 x half offset hinge set 4 x dropbolt
4L1R	Inside WPS, PS ICS WPS, PS outside RCS HHS HHS	2 x pivot set 2 x wall pivot set* 1 x intermediate carrier set 1 x right carrier set 2 x half offset hinge set 4 x dropbolt
BL2R	inside WPS, PS ICS WPS, PS outside LCS UPS, PS HHS HS	2 x pivot set 2 x wall pivot set* 1 x intermediate carrier set 1 x left carrier set 1 x hinge set 1 x half offset hinge set 4 x dropbolt
5L	Inside WPS, PS ICS ICS outside HHS HS	1 x pivot set 1 x wall pivot set* 2 x intermediate carrier set 1 x hinge set 1 x half offset hinge set 4 x dropbott
BL3R	inside WPS, PS ICS ICS WPS, PS outside may be reversed the set of	2 x pivot set 2 x wall pivot set* 2 x intermediate carrier set 2 x half offset hinge set 6 x dropbolt
۲L	inside WPS, PS ICS ICS ICS outside HHS HS HS	1 x pivot set 1 x wall pivot set* 3 x intermediate carrier set 2 x hinge set 1 x hait offset hinge set 6 x dropbolt
4L3R	inside WPS, PS ICS RCS ICS WPS, PS outside HHS HHS HHS HHS	2 x pivot set 2 x wall pivot set* 2 x intermediate carrier set 1 x right carrier set 3 x half offset hinge set 6 x dropbolt
öL2R	Inside WPS, PS ICS ICS RCS WPS, PS outside HHS HS	2 x pivot set 2 x wall pivot set* 2 x intermediate carrier set 1 x left carrier set 2 x hinge set 1 x half offset hinge set 6 x dropbolt
5L3R	Inside WPS, PS ICS ICS ICS WPS, PS outside HHS HS HS HS	2 x pivot set 2 x wall pivot set* 3 x intermediate carrier set 1 x hinge set 2 x half offset hinge set 8 x dropbolt

## COMMON PANEL LAYOUTS



\* Wall Pivot Sets required for doors over 2250mm

## SURELOCK II™ ADJUSTMENT

Surelock II<sup>™</sup> is Centor's patented carrier pin locking system which ensures that once door heights are set at the top pivots, intermediate and end carriers, they stay set!



Using Surelock II™ is simple

- 1 Insert a flat-bladed screwdriver into slot to depress the spring.
- 2 With the spring depressed start the adjustment using a 14mm spanner.
- 3 Turn the spanner a full revolution.
- 4 Repeat as necessary.

Every full rotation = 1.25mm height adjustment



While every effort has been made to ensure the accuracy of the information in this publication, Centor Architectural assume no responsibility for errors or omissions or any consequences of reliance solely on this publication.





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