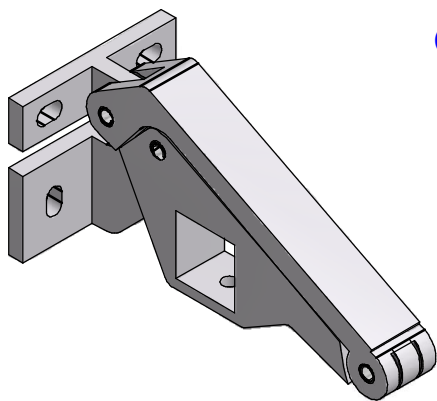


FOLDING OPENER FABRICATORS MANUAL

27th Edition



Caldwell Hardware (UK) Ltd

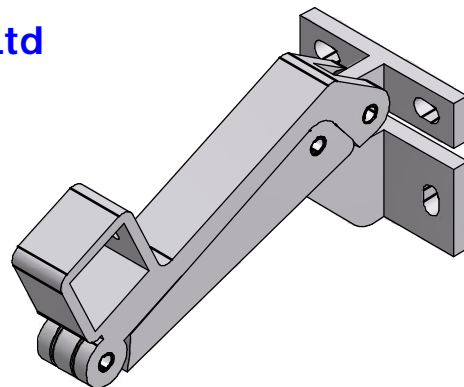
Herald Way,
Coventry,
CV3 2RQ.

Tel. 024 7643 7900

Fax. 024 7643 7969

Email: sales@caldwell.co.uk

Web Site: www.caldwell.co.uk



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KEY FEATURES

- GIVES SECURE LOCKING AND CONTROLLED VENTILATION IN ONE SIMPLE OPERATION.
- IDEAL FOR USE IN SCHOOLS, HOSPITALS, OFFICES, HOTELS, RESIDENTIAL HOMES, AND SHELTERED HOUSING.
- CAN BE FITTED TO MOST TIMBER, PVC-U, ALUMINIUM, STEEL, AND COMPOSITE WINDOWS.
- AVAILABLE IN LOCKABLE FOLD-ASIDE OR RELEASABLE VARIATIONS.
- ANODISED OR PAINT FINISH OPTIONS

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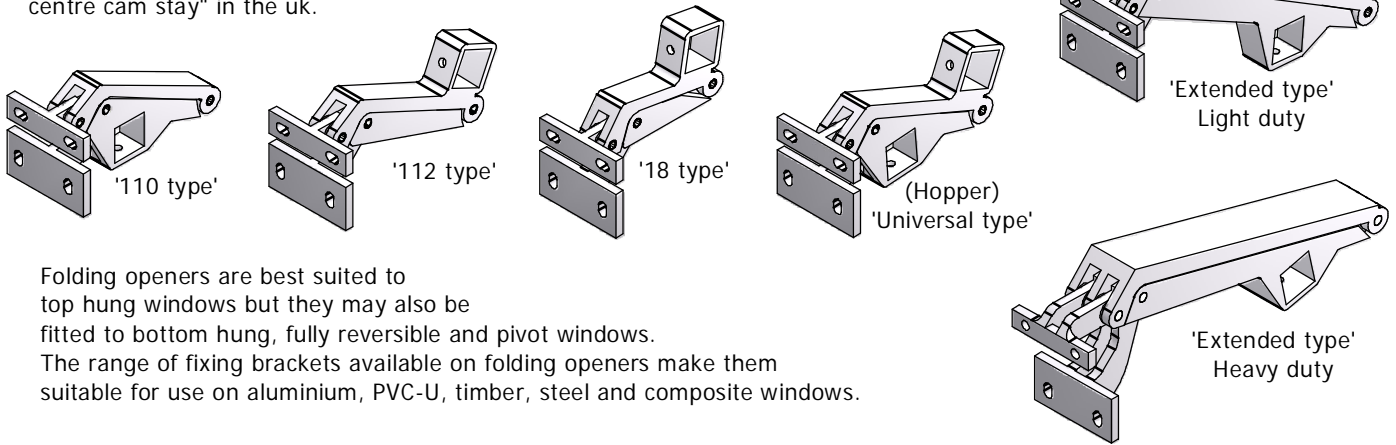
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Introduction To Folding Openers

Caldwell's range of folding openers are the premier "over centre cam stay" in the uk.

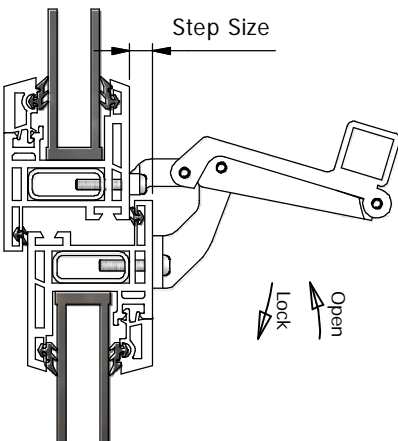


Folding openers are best suited to top hung windows but they may also be fitted to bottom hung, fully reversible and pivot windows. The range of fixing brackets available on folding openers make them suitable for use on aluminium, PVC-U, timber, steel and composite windows.

FIXING DETAILS

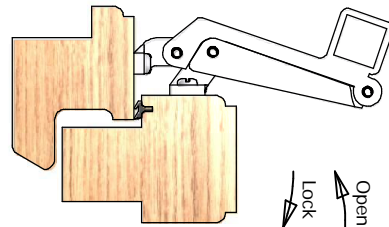
PVC-U Windows

When using PVC-U windows, always fix into reinforcement



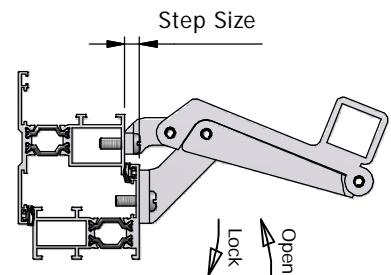
Timber Windows

When using timber windows, do not fit too close to edges of profile. Doing so may cause the timber to split. (1" min. length screws must be used).

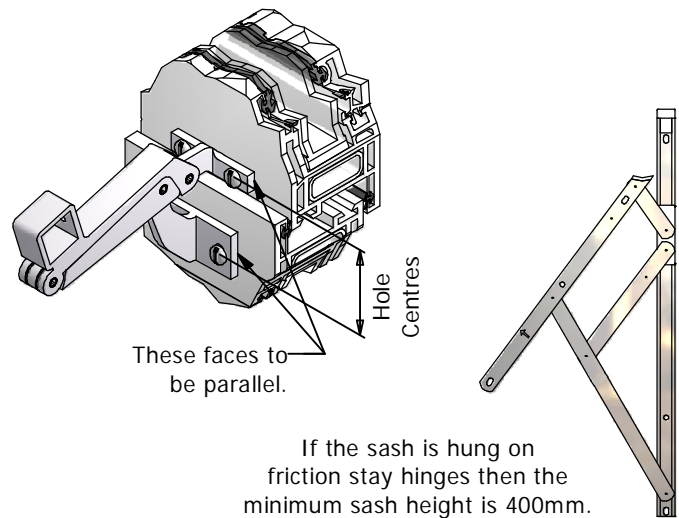


Aluminium Windows

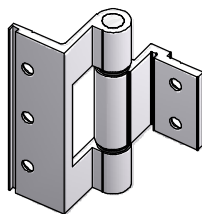
When using aluminium windows, only use recommended fixings. (check with systems company if in doubt).



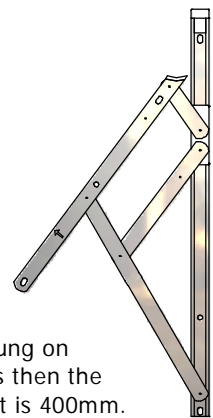
When fixing folding openers to windows the hole centres should be correct to the specification of opener being used. The sash bracket & frame bracket should be in line & square. When fitting tandem bars the folding openers should be square & in line with each other.



When a sash is hung on butt hinges the minimum sash height should be no less than 250mm



If the sash is hung on friction stay hinges then the minimum sash height is 400mm.

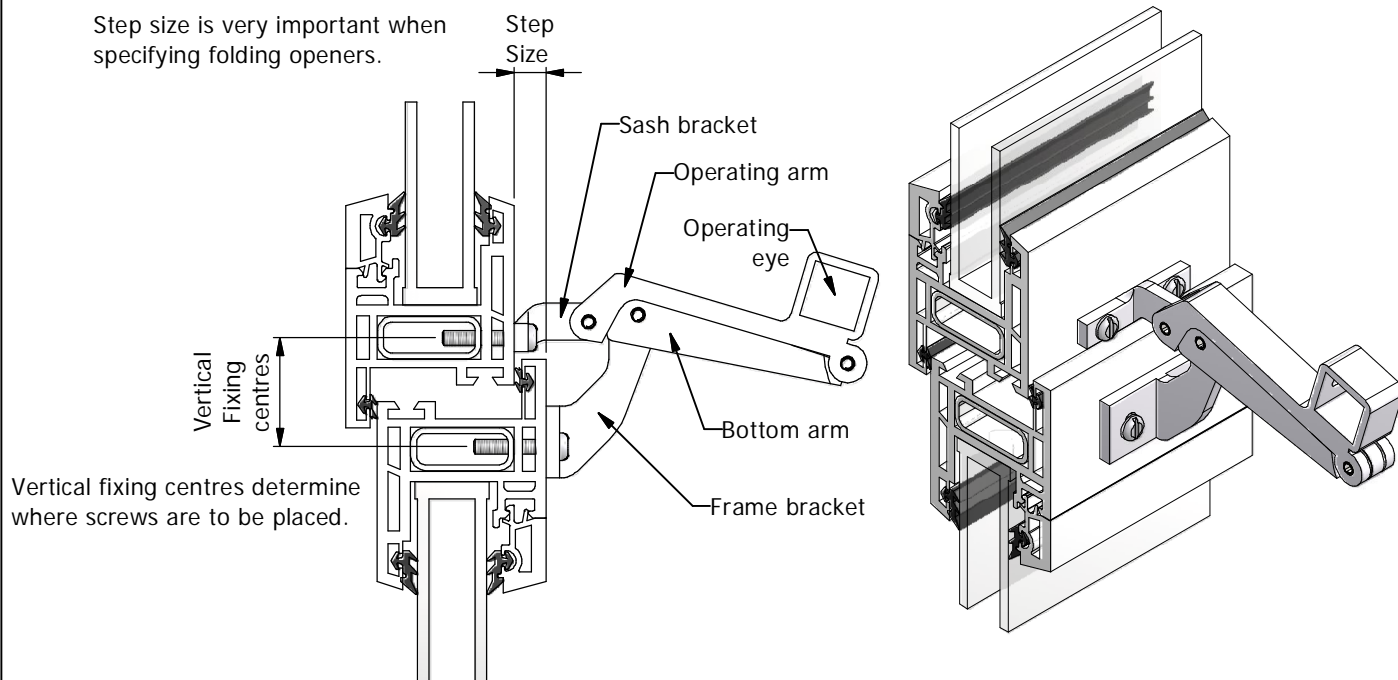


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Key Features



Model Options & Finish Options

The simplicity of use and robustness of folding openers make them particularly suitable for schools, hospitals, offices, care homes and sheltered housing.

Folding openers can be linked in pairs or a triple to accommodate different window widths and certain types can be operated at high level by using a tandem eye and pole operator.

The two standard types of folding opener give a sash movement of 150mm (112 & 110 types). If a greater window opening is required then an extended folding opener is available. This gives a sash movement of 315mm. If a smaller opening is required then a shorter folding opener is available. The 18 type folding openers give a sash movement of 100mm.

Sash Movement	Folding Opener
100mm	18 Type
150mm	110 & 112 Type
315mm	Extended

All folding openers are available in locking and/or releasable form and range are also available in fold aside form

The standard finish for all folding openers and accessories is silver anodised (AA15). Colour anodising and colour powder coated finishes are also available.

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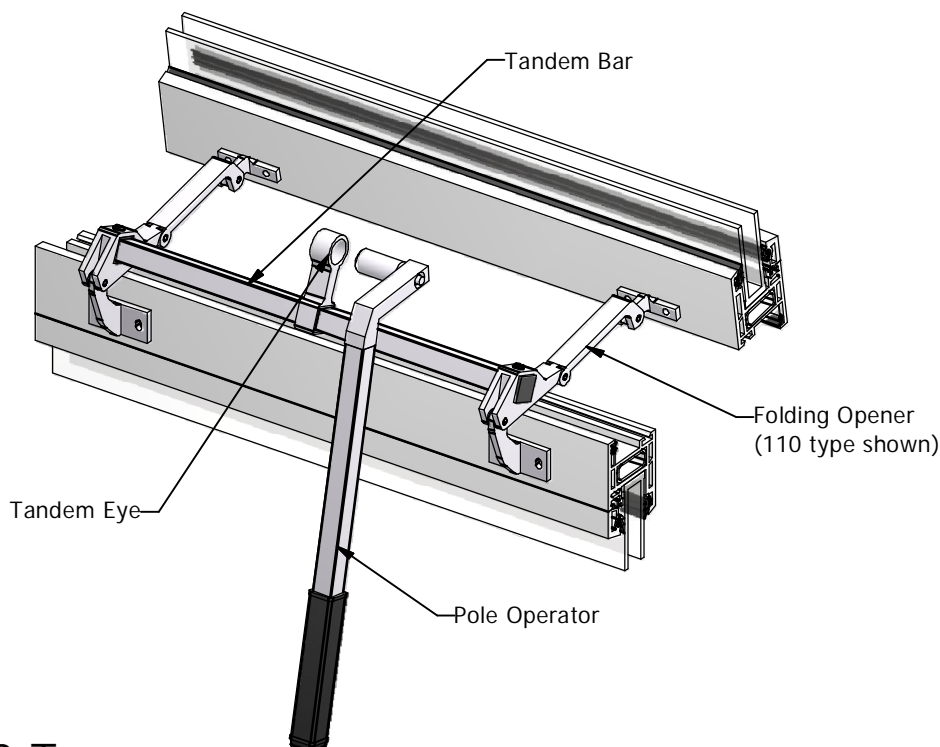
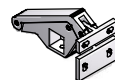
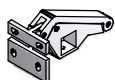
Applications Data

110 Type

The action of the 110 type folding opener allows the operating eye to remain inside the building even when the window is fully open. This is therefore ideal where pole operation is required.

Hand operation of these folding openers is not recommended especially when linked. The geometry of these folding openers means there is a chance that fingers could become trapped.

When using a 110 type on a hopper (bottom hung) window a minimum of 85mm must be left above the top arm of the folding opener, this allows the folding opener to snap up.



112 Type

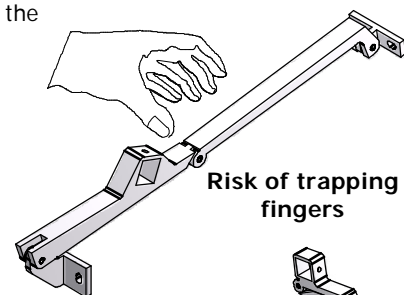
The action of the 112 type folding opener ensures that the operating eye and tandem bar do not interfere with internal cill boards. The position of its operating eye gives an extended arc of operation making it ideal for hand operation.

Extended Light & Heavy Duty

The operation of extended folding openers is easiest when linked with a tandem bar. If they are to be used singularly then an operating handle must be used.

When the extended folding opener is closed the tandem eye drops below the level of sash, therefore there is a chance that fingers could become trapped if a tandem bar or operating handle is not used.

Extended folding openers are not ideal for high level pole operation.



18 Type

The 18 type folding opener is similar to the 112 type folding opener however its operating arc is smaller.

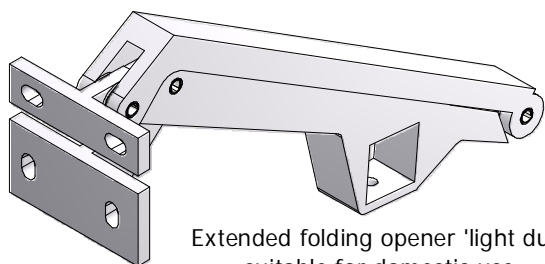
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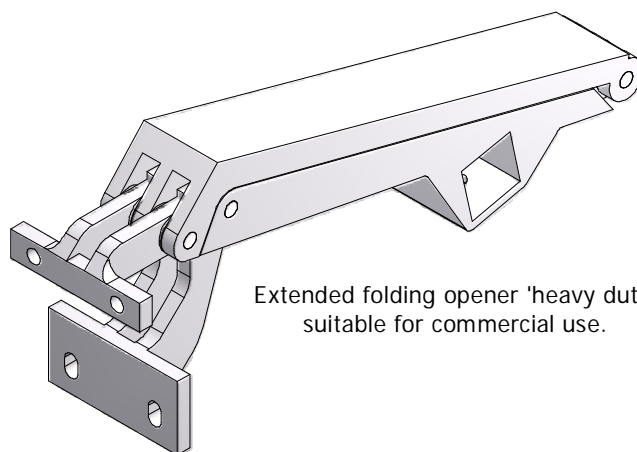
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Heavy Duty Extended Folding Openers



Extended folding opener 'light duty'
suitable for domestic use.



Extended folding opener 'heavy duty'
suitable for commercial use.

Extended Folding Openers

The extended folding openers are designed for windows that need an extra wide opening. Giving a throw of 315mm from the closed position they are ideal for extra ventilation.

Heavy duty extended folding openers for commercial use are suited to places like schools, offices, factories, & anywhere that they may come under more robust use. This is down to its 3 knuckle design which gives additional strength.

As stated earlier in the manual extended folding openers are easier used with a tandem bar or operating handle. Due to the position of the operating eye & the throw of the window, tandem eyes can be difficult to reach & are not recommended for high level use (out of hands reach). Also if the window has a cill this must be taken into account due to the drop of the operating arms when in the closed position, the operating arms could clash with the cill.

Heavy duty extended folding openers come in satin anodised & hipca white finishes. Other finishes can be supplied, please check with technical or customer services.

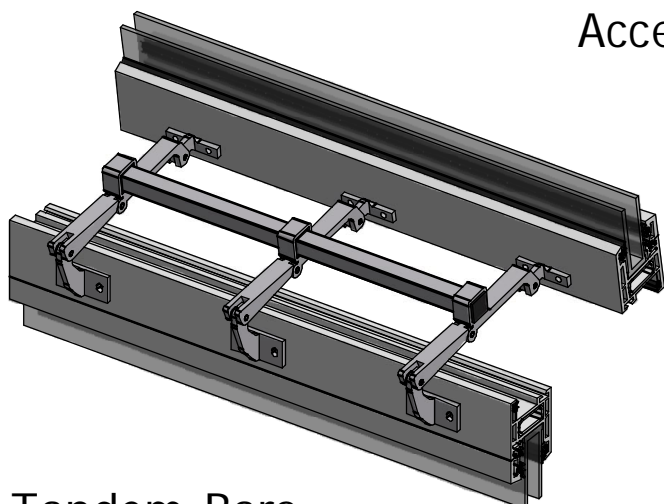
All heavy duty extended folding openers come in the step size and vertical hole centre bracket set ups as the light duty extended folding openers. See the folding opener quick reference matrix for the range of bracket set ups available.

The part numbers are the same apart from the Letters 'HD, added to the number e.g. 12107 extended folding opener ref would be 121HD07.

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Accessories

Tandem Bar Rules



Tandem Bars

Tandem bars range in length from 200mm to 4000mm depending on the width of window.

When using tandem bars it is important to follow the tandem bar rule rules shown.

1	Folding openers must be positioned between 100mm and 200mm from the corner of the sash. The tandem bar therefore should be 200mm to 400mm less than the width of the window.
2	Tandem bar lengths are always specified by hole centres and not overall length.
3	The maximum distance between linked folding openers should not exceed 900mm. If a 1000mm length tandem bar is required then a third folding opener must be used.
4	If possible length of tandem bars should be rounded up or down to the nearest 50mm increment (i.e. 550,600....850....etc.)
5	When a third folding opener is used a tandem bar with a centre hole can be supplied. A modified end cap 25064/M is also required.
6	If a fourth folding opener is required a tandem bar will be supplied with no centre holes for the inner two folding openers. Two modified end caps 25064/M will be needed.

Tandem Bar Lengths & Number of Openers Required

Formulae for tandem bar lengths: $x = \text{Sash width} - 300$ (round up or down to the nearest 100mm).

$x = 0\text{mm to }400\text{mm}$	$x = 401\text{mm to }900\text{mm}$	$x = 901\text{mm to }1800\text{mm}$	$x = 1801\text{mm to }2700\text{mm}$	$x = 2701\text{ plus}$
1 opener *	2 openers	3 openers	4 openers	Contact Technical

* The number of folding openers shown above is the minimum number that Caldwell recommends to achieve satisfactory open & close functions in domestic/low usage applications. On high use applications such as schools, hospitals & public buildings where there will be multiple users then Caldwell always recommend the use of at least two folding openers as long as space permits. Generally this will offer a more robust operation when compared to that of a single folding opener in such applications.

Pole Operators

The standard length of pole operators is 1400mm. Longer or shorter pole operators are available on request. The length of pole operators rounded up or down to the nearest 100mm increment.

Pole operators are supplied with either a large or small boss depending on the style of tandem eye being used (**small boss required for single folding openers**).

Part No **283041400** = small boss (Ø18mm) with 1400mm long pole operator.

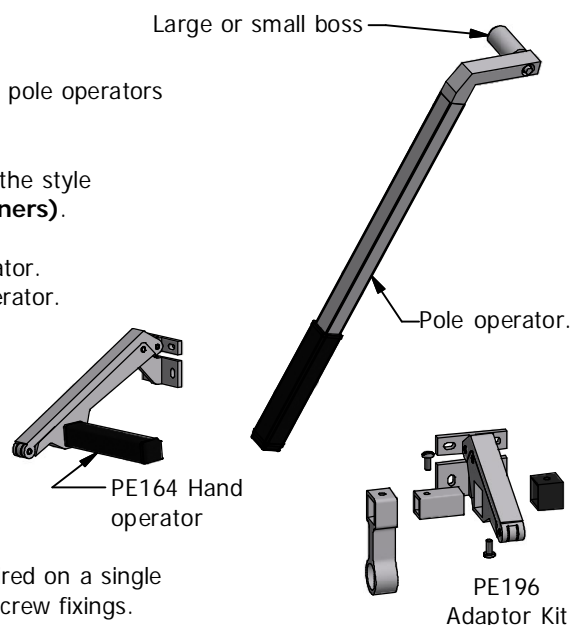
Part No **283061400** = large boss (Ø21.5mm) with 1400mm long pole operator.

Hand Operator

The hand operator comes in one standard size and will fit any folding opener (where no tandem bar is fitted). The part number is PE164.

Tandem Eye Adaptor Kit

The PE196 tandem eye adaptor is for use where a 263 tandem eye is required on a single folding opener. The kit includes the tandem eye, adaptor bar, end cap, & screw fixings.



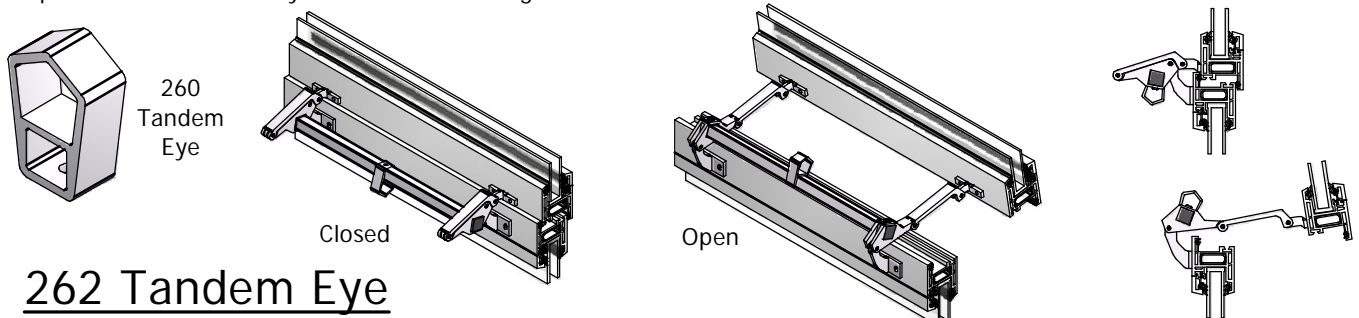
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Tandem Eyes Accessories

Pole operation of a single folding opener does not normally require a tandem eye. However, when linked by a tandem bar and pole operation is necessary then a tandem eye is required. The tandem eye should be fitted either centrally (in the case of two folding openers) or immediately to the side of the central folding opener (in the case of three folding openers). Three types of tandem eyes are available and the recommended fitting positions are shown below. Tandem eye kits include two end caps & three self tapping screws. Any alternatives to the fitting positions shown below should be fully tested before installation.

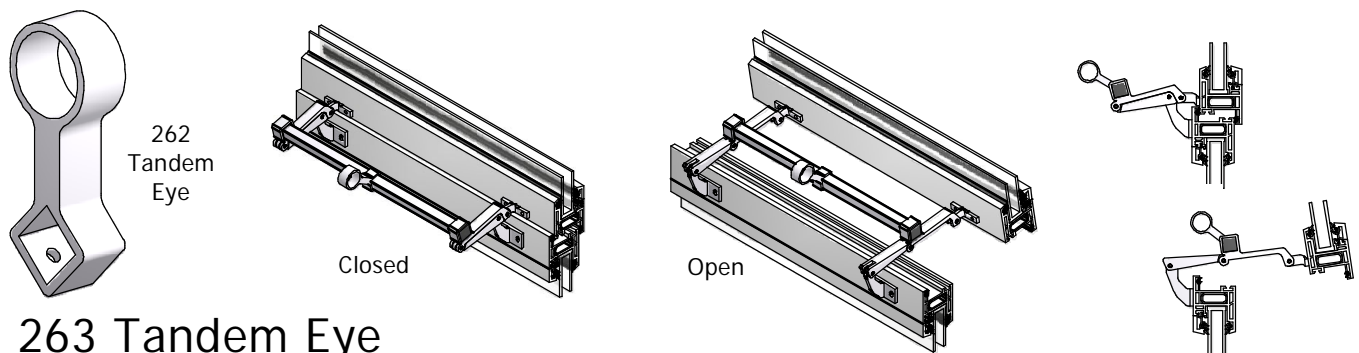
260 Tandem Eye

The 260 tandem eye is generally used on the 110 type folding openers. It should be operated with a small boss pole operator. This tandem eye is best suited to high level with a cill board.



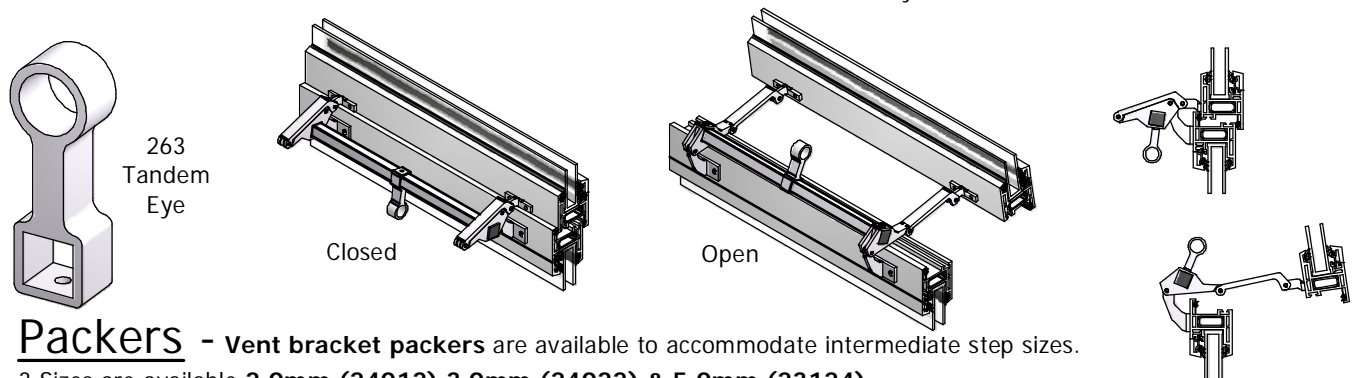
262 Tandem Eye

The 262 tandem eye is especially suited to the 112 type folding openers where an extended operating arc is required. Whilst the 112 type folding openers are not ideal for pole operation there may be applications where a tandem eye is required i.e just out of hands reach. If a pole operation of a 112 type folding opener is planned then testing must take place prior to installation. The 262 tandem eye should be operated with a large boss pole operator.



263 Tandem Eye

The 263 tandem eye is generally used on the 110 type folding openers to give an extended operating arc. It should be operated with a small boss pole operator. If this folding opener is to be used at high level with a cill board then note that clearance must be accounted for. In this case 260 tandem eye can be used.



Packers - Vent bracket packers are available to accommodate intermediate step sizes.

3 Sizes are available **2.0mm (24012)** **3.0mm (24022)** & **5.0mm (23124)**

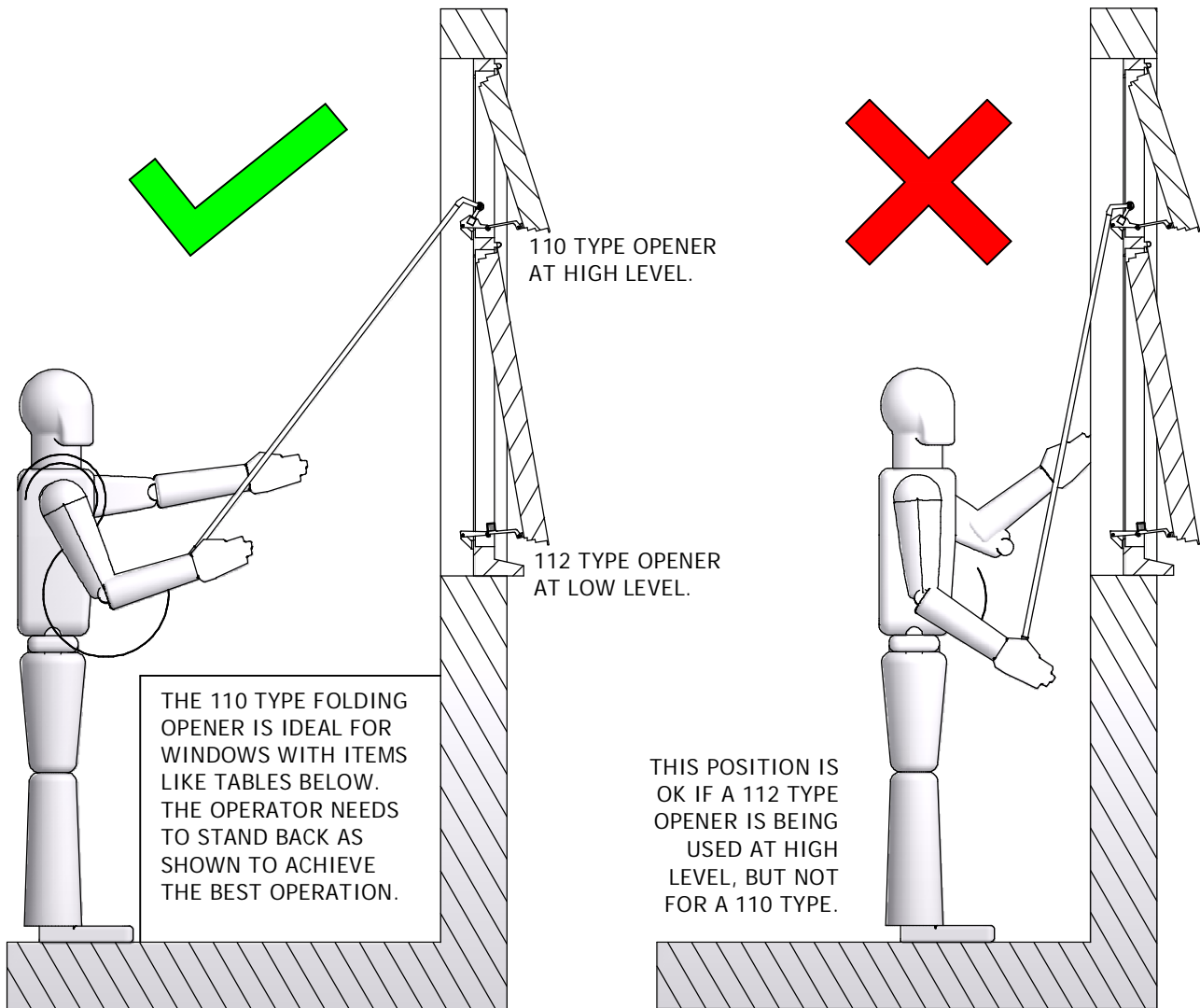
2.0mm & 3.0mm are aluminium and the 5.0mm is moulded black nylon.

Frame bracket packers are also available in a **5.0mm step (23102)** aluminium.

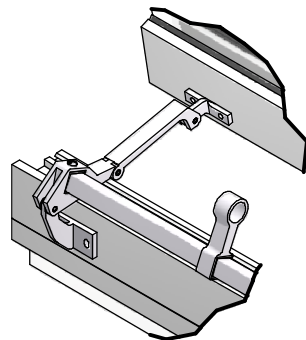
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Operation Of High Level Folding Openers

When using high level operation please ensure the correct standing position.

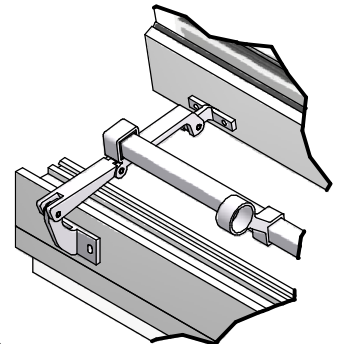


110 Type folding opener is designed for high level use. Due to the design of this opener it is much easier to operate with a pole operator. As the diagrams above show the ideal operating position is to stand away from the window. This allows items like tables to be below the window.



110 type opener.

112 Type folding opener is designed for low level hand operation, (same as 18 type & extended). Caldwell always recommend the 110 type folding opener for use at high level. If a 110 type folding opener can not be used then a trial fit of 112 type must take place to establish the suitability of a 112 in situ. If a 112 type opener has to be used the operator has to stand close to the window & move the opener in an arc motion.



112 type opener.

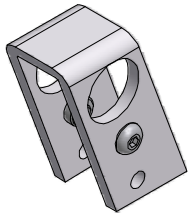
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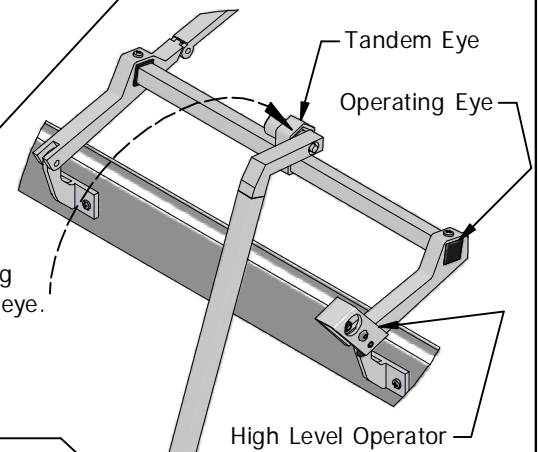
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OPERATOR FOR HIGH LEVEL FOLDING OPENERS

The Caldwell High Level operator (HLO) is suitable for most Caldwell folding openers that are required to be operated at high level (can't be operated by hand from floor level). The HLO can be purchased for retro-fit purposes using the part number KP1067 or, alternatively, it can be ordered as an integral part of an assembled folding opener by simply adding the 'H' suffix to the part number but preceding the required finish e.g. 11207HANSAT. Please note that HLO is not suitable for use with the 110, 114, 118, 125, 128, 182 or 184 styles, all heavy duty and all FoPlus types of folding openers.



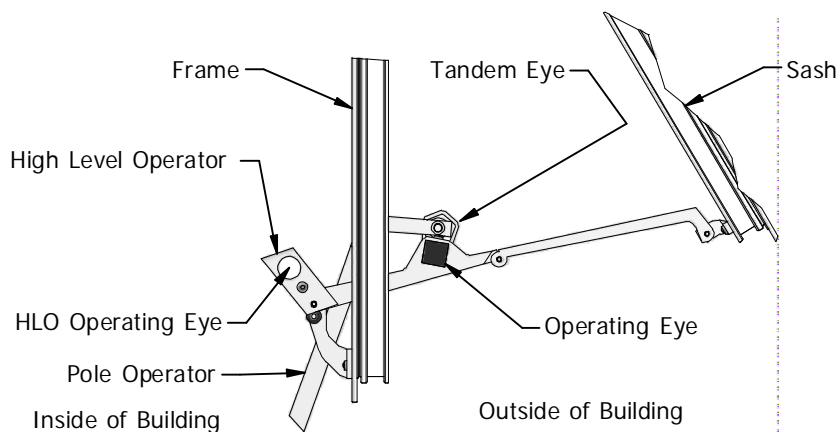
It is particularly suited for use on the extended folding openers, this allows good levels of ventilation to be achieved whilst also enabling the window to be easily and quickly closed after use.



Step 1.

Open window in normal manner. Single folding openers should be opened using the operating eye. Linked folding openers should be opened using the tandem eye. A Caldwell pole operator will be required to do this due to it being high level operation.

Note : When the folding opener reaches its fully open position the tandem eye may be out of sight to the operator.



Step 2

Attempt to close the window with a pole operator. At this stage the tandem eye and operating eye are often out of sight to the operator. This is because they have moved over outside of the window.

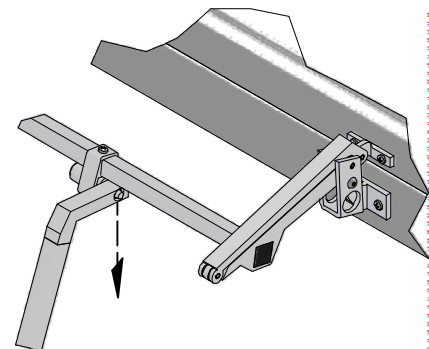
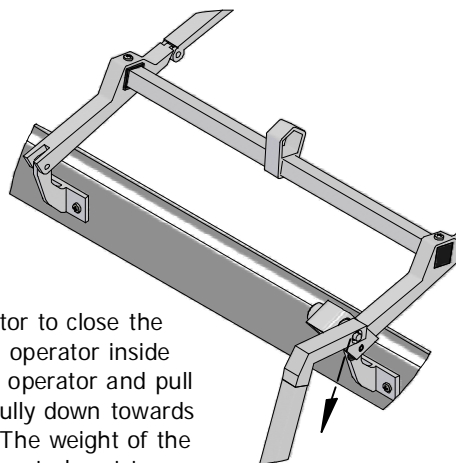
If however the folding opener can still easily be closed then proceed to step 4. If the folding opener can not be easily closed then proceed to step 3.

Step 4.

After removing the pole operator from the eye of the HLO, and using the operating eye or tandem eye of the folding opener, pull downwards on the pole operator until the sash is fully closed. Care should be taken to ensure that all folding openers are snapped shut into their locked position.

Step 3.

Use the high level operator to close the window. Locate the pole operator inside the eye of the high level operator and pull the high level operator fully down towards the person operating it. The weight of the sash will then close the vent almost to closed position.



Patent Applied For. Application No. - GB1204317.0.

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RETRO FITTING OF HIGH LEVEL OPERATOR TO FOLDING OPENERS

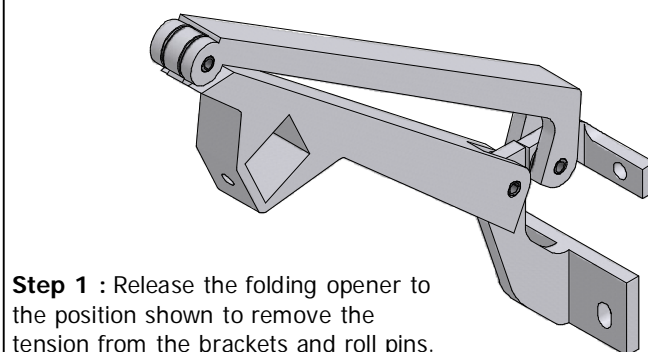
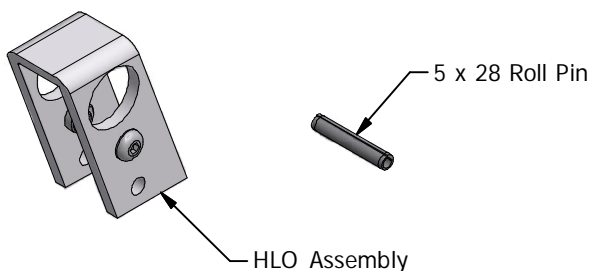
The Caldwell High Level operator (HLO) is suitable for most Caldwell folding openers that need to be operated at high level (can't be operated by hand from floor level). It is particularly suited for use on the extended folding openers, this allows good levels of ventilation to be achieved whilst also enabling the window to be easily and quickly closed after use.

Please note that the HLO is not suitable for use with the 110, 114, 118, 125, 128, 182 or 184 styles, all heavy duty and all FoPlus types of folding openers.

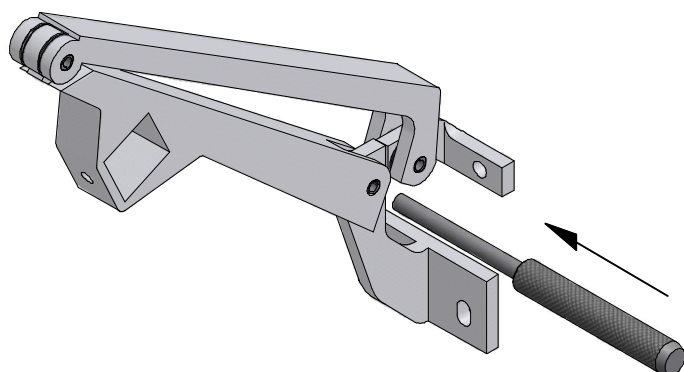
The HLO can be purchased for retro-fit purposes using the part number KP1067, it is also available assembled on the opener (please see datasheet 00724).

Caldwell always recommends removal of the folding opener from the window if possible to enable fitment of the HLO in a workshop type environment however, it is possible for the HLO assembly to be fitted to the folding opener whilst on the window. A risk assessment should always be performed by a "Competent Person" to ensure safe working practices are used before commencement of fitting.

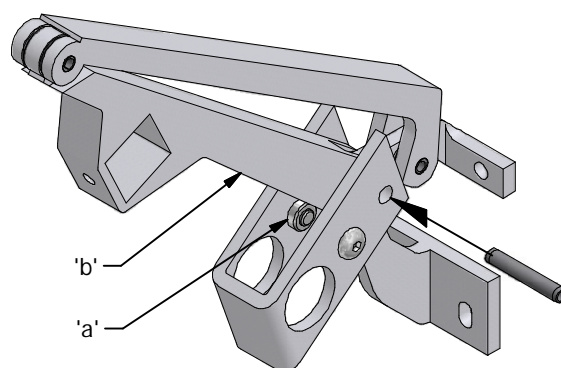
Before fitting, ensure that the kit contains both the HLO assembly and the extended roll pin shown.



Step 1 : Release the folding opener to the position shown to remove the tension from the brackets and roll pins.

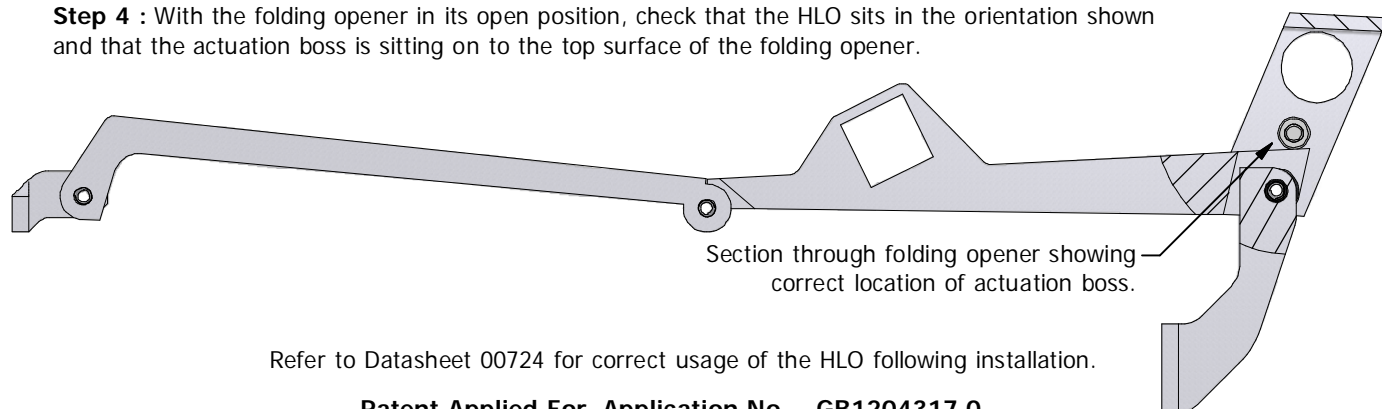


Step 2 : Using a suitable drive punch or press, remove the roll pin from the assembly as shown.



Step 3 : Place the HLO assembly over the folding opener ensuring that actuation boss 'a' sits on top of surface 'b'. Using a suitable drive punch or press, fit the 5 x 28 roll pin supplied in the kit through the hole as shown to retain the HLO assembly to the folding opener.

Step 4 : With the folding opener in its open position, check that the HLO sits in the orientation shown and that the actuation boss is sitting on to the top surface of the folding opener.



Refer to Datasheet 00724 for correct usage of the HLO following installation.

Patent Applied For. Application No. - GB1204317.0.

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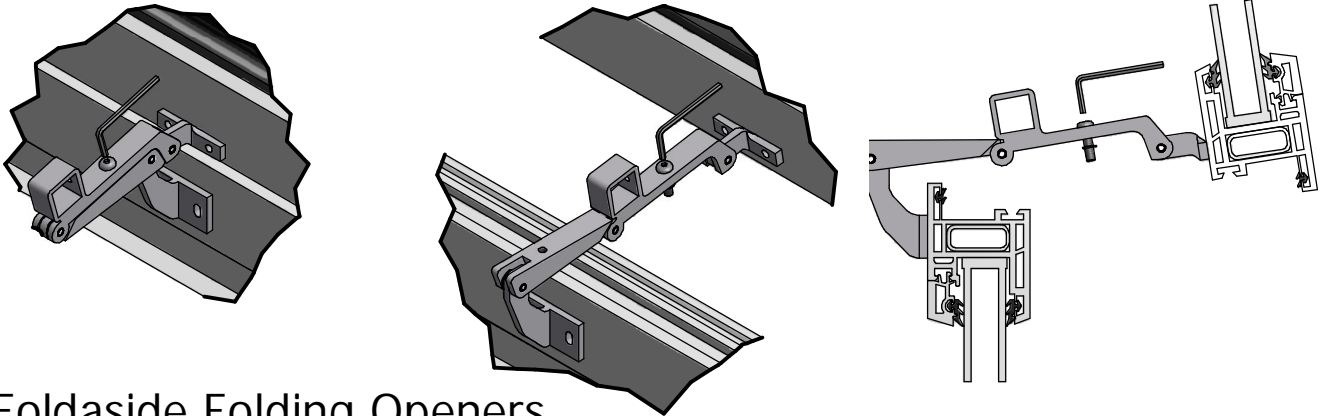
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Specials

All folding openers are available in locking and/or releasable format. A range is also available in fold aside format. Some folding openers are also available with a combination of different options. i.e Lockable & Releasable.

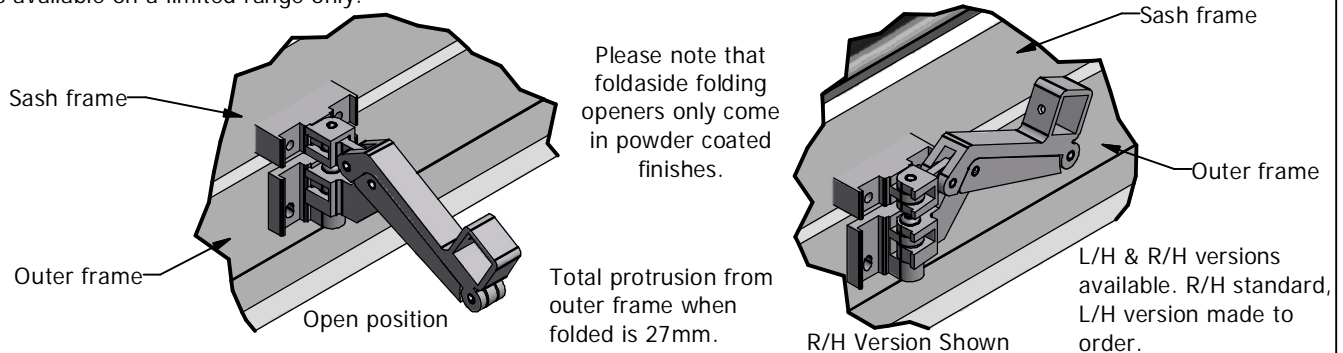
Lockable Folding Openers

The lockable variation is operated by the use of a hexagonal key which prevents unauthorised opening. It can be fitted to all types of folding openers. The locking screw is permanently retained by a retaining washer.



Foldaside Folding Openers

The foldaside folding openers are designed to fold back against the frame. Some of the clamping pressure on the sash maybe relieved when folding the opener aside and therefore it is recommended that when foldaside folding openers are used a bubble seal should be fitted to ensure a sufficient seal compression is achieved. It is ideally suited for the eye level windows, windows where blinds are fitted and inside secondary glazed windows. The foldaside option is available on a limited range only.

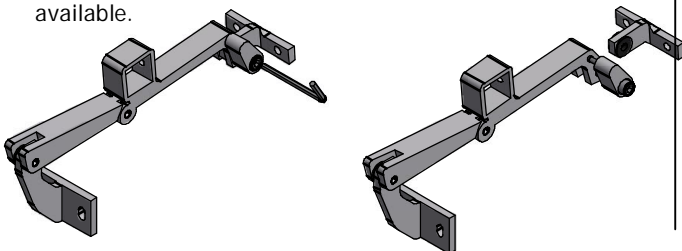


Releasable Folding Openers.

The releasable option can be incorporated into the 110 type, 112 type and the 18 type of folding openers. It can also be used in conjunction with the lockable version. The releasable option offers restricted opening of windows (casement, horizontal pivot and fully reversible) with a release facility for cleaning by authorised persons.

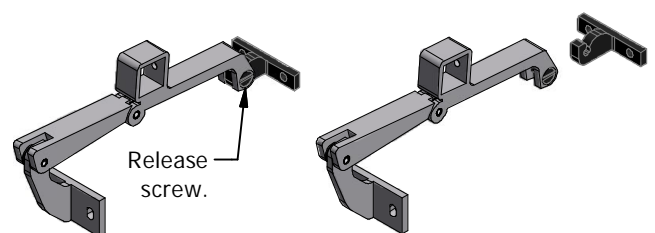
Standard Release

Released by conventional allen key operation. Security adaptations available.



Quick-Release

Released by a coin or square edged house hold tool. Spring loaded snap action re-engagement.



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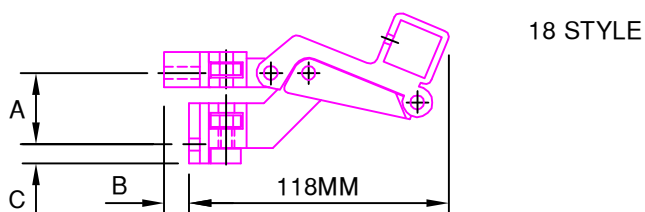
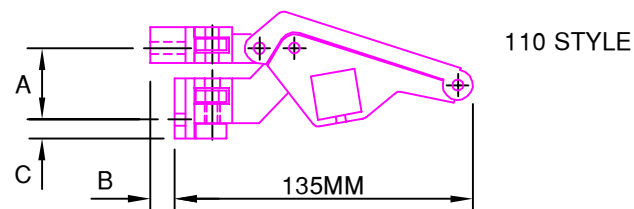
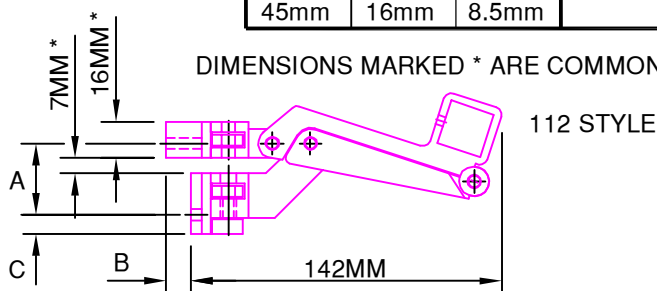
CALDWELL

SOLUTIONS THAT SET NEW STANDARDS

Telephone 024 76437900

FOLD ASIDE FOLDING OPENER MATRIX

DIM A	DIM B	DIM C	FOLDING OPENER STYLE		
			110	112	18
20mm	Flush	13.5mm		11300F	18100F
20mm	5mm	13.5mm		11305F	18105F
20mm	7mm	13.5mm		11307F	18107F
20mm	11mm	13.5mm		11311F	18111F
20mm	16mm	13.5mm		11316F	18116F
25mm	Flush	8.5mm	11000F	11200F	18000F
25mm	5mm	8.5mm	11105F	11205F	18005F
25mm	7mm	8.5mm	11107F	11207F	18007F
25mm	11mm	8.5mm	11111F	11211F	18011F
25mm	16mm	8.5mm	11116F	11216F	18016F
32mm	Flush	8.5mm		11700F	18300F
32mm	5mm	8.5mm		11705F	18305F
32mm	7mm	8.5mm		11707F	18307F
32mm	11mm	8.5mm		11711F	18311F
32mm	16mm	8.5mm		11716F	18316F
45mm	Flush	8.5mm	13100F	13000F	18500F
38mm	5mm	8.5mm	13105F	13005F	18505F
38mm	7mm	8.5mm	13107F	13007F	18507F
38mm	11mm	8.5mm	13111F	13011F	18511F
38mm	16mm	8.5mm	13116F	13016F	18516F
45mm	Flush	8.5mm		19000F	19100F
45mm	5mm	8.5mm		19005F	19105F
45mm	7mm	8.5mm		19007F	19107F
45mm	11mm	8.5mm		19011F	19111F
45mm	16mm	8.5mm		19016F	19116F



FOLD ASIDE FOLDING OPENERS FOLD TO THE RIGHT AS STANDARD. RH VERSION IS AVAILABLE AS STANDARD. LEFT HAND VERSION IS MADE TO ORDER. ADDING X TO THE END OF THE PART NUMBER (BEFORE THE FINISH) WILL DENOTE LH VERSION EG. 11200FXHIPAWHITE.

FOLD ASIDE FOLDING OPENERS ARE ONLY AVAILABLE IN A POWDER COATED FINISH.

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SOLUTIONS THAT SET NEW STANDARDS

Bespoke Folding Openers

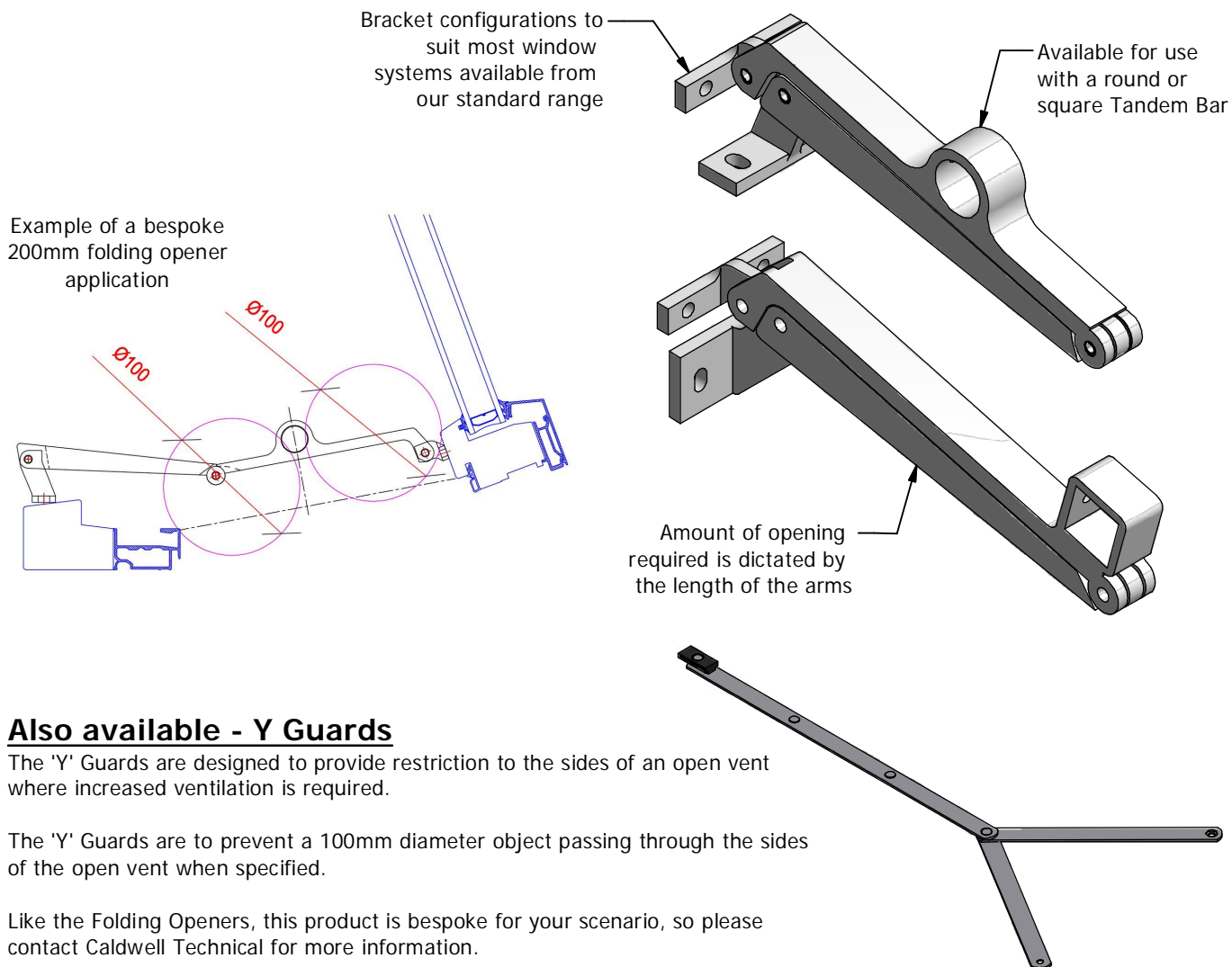
Caldwell can now offer bespoke Folding Openers in response to the market demand for very specific scenarios on top hung outward opening windows. The bespoke folding openers are manufactured by use of either extruded or water jet cut components depending on the quantities involved and detailed below are typical examples of when a bespoke folding opener is required:

- Windows requiring restriction of opening to a specific distance (typically 100mm, either side of the tandem bar)
- Windows requiring increased ventilation beyond that of standard openers
- Restriction to prevent 100mm diameter objects passing through window

Bespoke Folding Openers are always supplied to order, due to this our standard lead time for Folding Openers does not apply given the design & development work involved. A lead time will be given on our quotation when the specification is agreed.

Typical examples are shown below. However, as the opener is produced bespoke for your scenario (i.e. ventilation and restriction requirements), please contact Caldwell Hardware to discuss the possibilities.

****PLEASE NOTE THAT WATER JET CUT FOLDING OPENERS CAN ONLY BE SUPPLIED IN POWDER COAT FINISH.****



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SOLUTIONS THAT SET NEW STANDARDS

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Link Arm Folding Opener Quick Reference Matrix

DIM A	BODY STYLE	DIM B	REF.
20MM	112	23MM	113L023
31MM	110	23MM	111L023
31MM	112	23MM	112L023
31MM	18	47MM	184L047
35MM	112	23MM	117L023
45MM	110	23MM	131L023
45MM	112	23MM	130L023
45MM	112	44MM	130L044
45MM	18	23MM	185L023
53MM	110	23MM	191L023
53MM	110	26MM	191L026
53MM	112	23MM	190L023
53MM	112	26MM	190L026
53MM	18	26MM	187L026
53MM	18	44MM	187L044

Notes

Different step sizes are available depending on quantities.

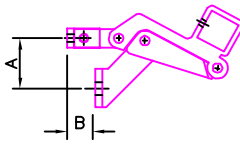
Link Arm Folding openers are available in locking and releasable or in a combination of both.

For further information please refer to catalogue or contact the technical department.

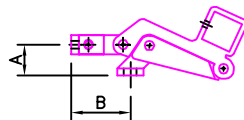
Available Styles

18 STYLES

185L023, 187L044, 187L026

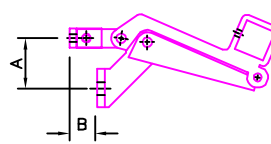


184L047

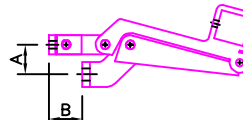


112 STYLES

117L023, 190L023, 130L023, 112L023, 130L044, 190L026

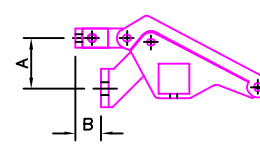


113L023



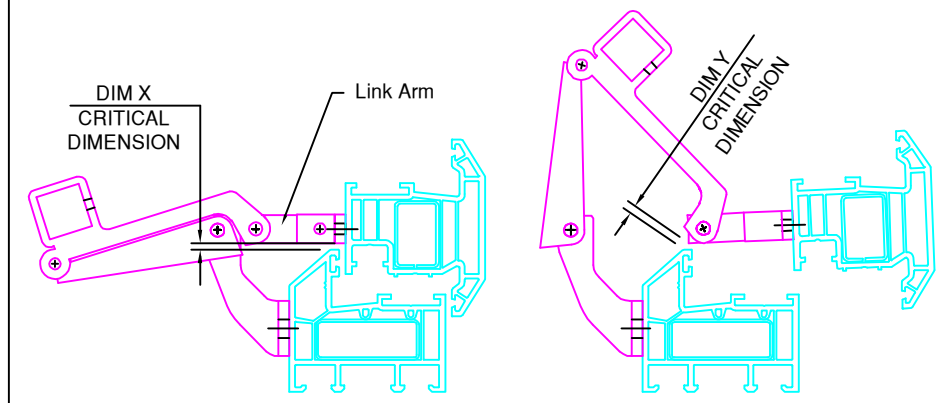
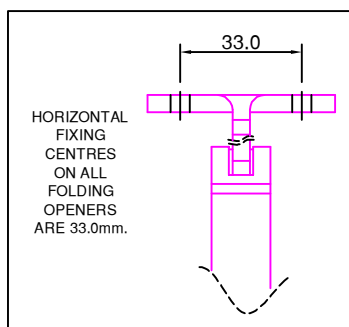
110 STYLES

111L023, 191L023, 191L026, 131L023



IMPORTANT APPLICATION NOTES

- If possible applications requiring link arm folding openers should be trial fitted on a window before ordering bulk.
- Care must be taken to ensure that the rear of the link arm does not clash on the cill especially when moving to the open position (please refer to DIM Y).
- The length of the link arm and the window height will determine the size of the DIM X required.
- For further information please refer to Caldwell Folding Opener Fabricator manual or alternatively please contact technical support.



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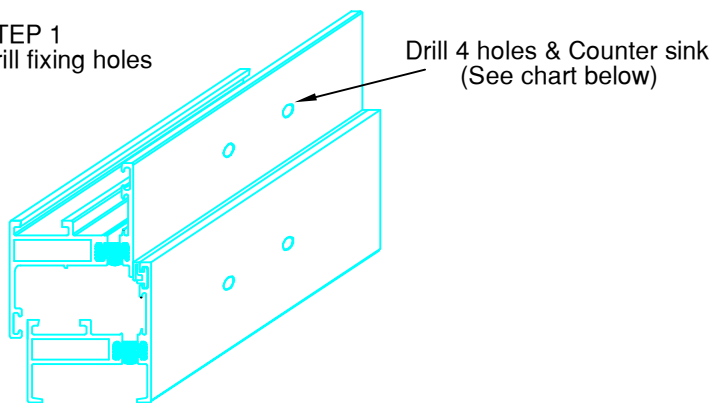
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SOLUTIONS THAT SET NEW STANDARDS

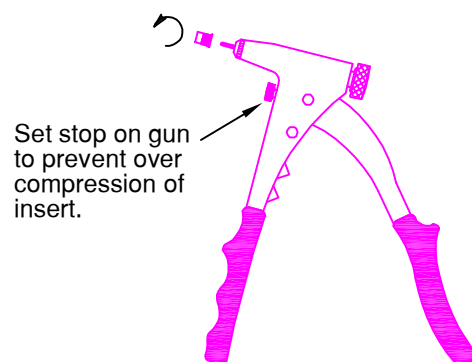
Telephone 024 76437900

Rivet Nut insert application detail for Aluminium windows

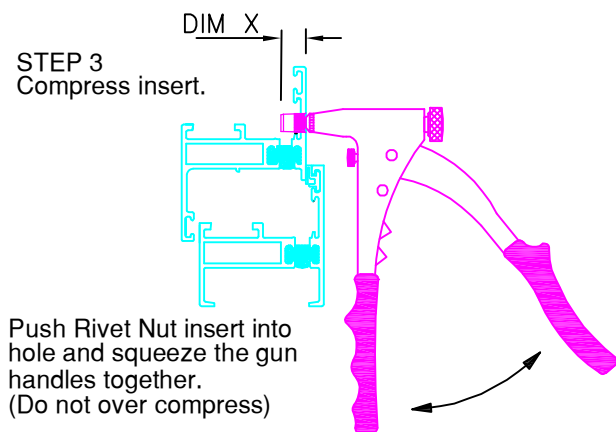
STEP 1
Drill fixing holes



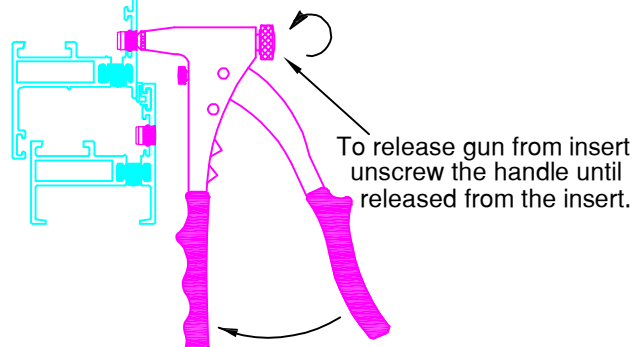
STEP 2
Screw insert onto gun.



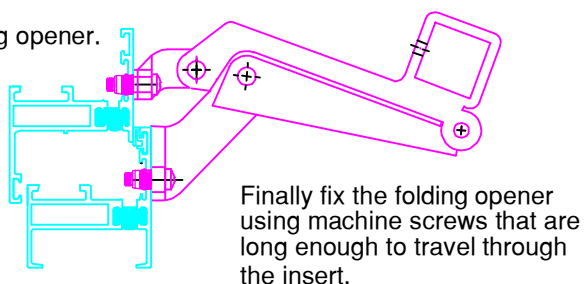
STEP 3
Compress insert.



STEP 4
Release gun from insert.



STEP 5
Fix folding opener.



Screws must be DIM X + component thickness minimum.

The inserts have been tested and approved by Caldwell Hardware for particular applications, they are shown as a suggestion only. A copy of the report (test report GTR-0029) is available on request.

Supplier details for inserts and tools:

Primary Fasteners Limited
PO Box 10571
Shirley
Solihull
West Midlands
B90 9WP

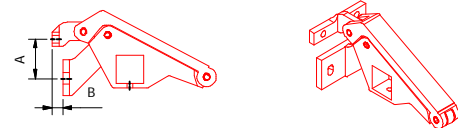
TEL: 0121 247 5191
FAX: 0121 535 7094
Email: mailroom@prifast.co.uk
www.prifast.co.uk

Rivet Nut				Insert tool	
Thread size	Hole size	Material thickness	DIM X	PFL Part No	PFL Part No
M4	Ø6.0 & Counter sink Ø7.0 @ 90°	0.25 - 3.0	12.0	RNS4SH	MF306
M5	Ø7.0 & Counter sink Ø8.0 @ 90°	0.25 - 3.0	12.5	RNS5SH	MF306
M6	Ø9.0 & Counter sink Ø10.0 @ 90°	0.25 - 3.5	15.5	RNS6SH	MF306

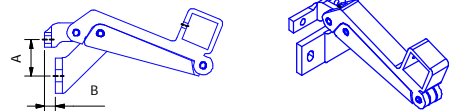
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Folding Opener Quick Reference Matrix

110, 111, 115, 122, 123, 131 & 191 type



112, 113, 116, 117, 130 & 190 type



114 & 118 type



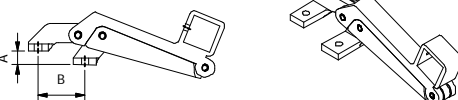
180, 181, 183, 185 & 187 type



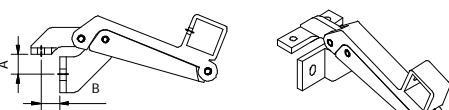
182 & 184 type



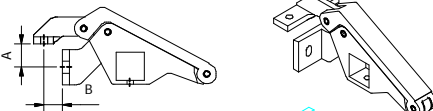
114IG, 118IG & 182IG type



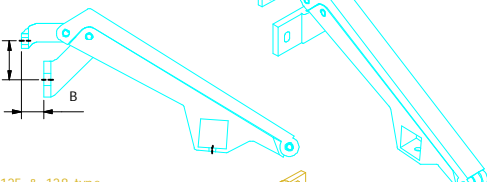
112IG, 113IG, 117IG, 130IG, 180IG & 181IG type



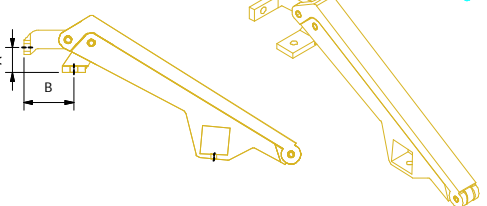
110IG type



120, 121, 124, 126 & 129 type



125 & 128 type



STYLE	DIM A	REF.	DIM B	REF.	DIM B	REF.	DIM B	REF.	DIM B	REF.	DIM B
110	25mm	11000	FLUSH								
111	25mm			11105	5mm	11107	7mm	11111	11mm	11116	16mm
112	25mm	11200	FLUSH	11205	5mm	11207	7mm	11211	11mm	11216	16mm
113	20mm	11300	FLUSH								
113	15mm			11305	5mm	11307	7mm	11311	11mm	11316	16mm
114	15mm	11400	19mm	11405	24mm	11407	26mm	11411	30mm	11416	35mm
115	20mm			11505	5mm	11507	7mm	11511	11mm	11516	16mm
116	20mm			11605	5mm	11607	7mm	11611	11mm	11616	16mm
117	35mm	11700	FLUSH								
117	32mm			11705	5mm	11707	7mm	11711	11mm	11716	16mm
118	25mm	11800	19mm	11805	24mm	11807	26mm	11811	30mm	11816	35mm
120	20mm			12005	5mm	12007	7mm	12011	11mm	12016	16mm
121	25mm			12105	5mm	12107	7mm	12107	11mm	12116	16mm
122	15mm			12205	5mm	12207	7mm	12211	11mm	12216	16mm
123	30mm			12305	5mm	12307	7mm	12311	11mm	12316	16mm
124	30mm	12400	FLUSH	12405	5mm	12407	7mm	12411	11mm	12416	16mm
125	15mm	12500	19mm	12505	24mm	12507	26mm	12511	30mm	12516	35mm
126	38mm			12605	5mm	12607	7mm	12611	11mm	12616	16mm
128	25mm	12800	19mm	12805	24mm	12807	26mm	12811	30mm	12816	35mm
129	48mm			12905	5mm	12907	7mm	12911	11mm	12916	16mm
130	45mm	13000	FLUSH								
130	38mm			13005	5mm	13007	7mm	13011	11mm	13016	16mm
131	45mm	13100	FLUSH								
131	38mm			13105	5mm	13107	7mm	13111	11mm	13116	16mm
180	25mm	18000	FLUSH	18005	5mm	18007	7mm	18011	11mm	18016	16mm
181	20mm	18100	FLUSH								
181	15mm			18105	5mm	18107	7mm	18111	11mm	18116	16mm
182	15mm	18200	19mm	18205	24mm	18207	26mm	18211	30mm	18216	35mm
183	35mm	18300	FLUSH								
183	32mm			18305	5mm	18307	7mm	18311	11mm	18316	16mm
184	25mm	18400	19mm	18405	24mm	18407	26mm	18411	30mm	18416	35mm
185	45mm	18500	FLUSH								
185	38mm			18505	5mm	18507	7mm	18511	11mm	18516	16mm
187	53mm	18700	FLUSH								
187	48mm			18705	5mm	18707	7mm	18711	11mm	18716	16mm
190	53mm	19000	FLUSH								
190	48mm			19005	5mm	19007	7mm	19011	11mm	19016	16mm
191	53mm	19100	FLUSH								
191	48mm			19105	5mm	19107	7mm	19111	11mm	19116	16mm
Internal Glaze	15mm	110IG	11mm								
Internal Glaze	16mm	112IG	13mm								
Internal Glaze	9mm	113IG	13mm								
Internal Glaze	11mm	114IG	34mm								
Internal Glaze	25mm	117IG	13mm								
Internal Glaze	22mm	118IG	34mm								
Internal Glaze	11mm	127IG	34mm								
Internal Glaze	34mm	130IG	13mm								
Internal Glaze	13mm	180IG	13mm								
Internal Glaze	8mm	181IG	13mm								
Internal Glaze	8mm	182IG	34mm								

Folding openers are available in locking, releasable and/or fold aside form. Link arm folding openers are available for some step sizes over 16mm
For further information please refer to catalogue or contact the technical support department.

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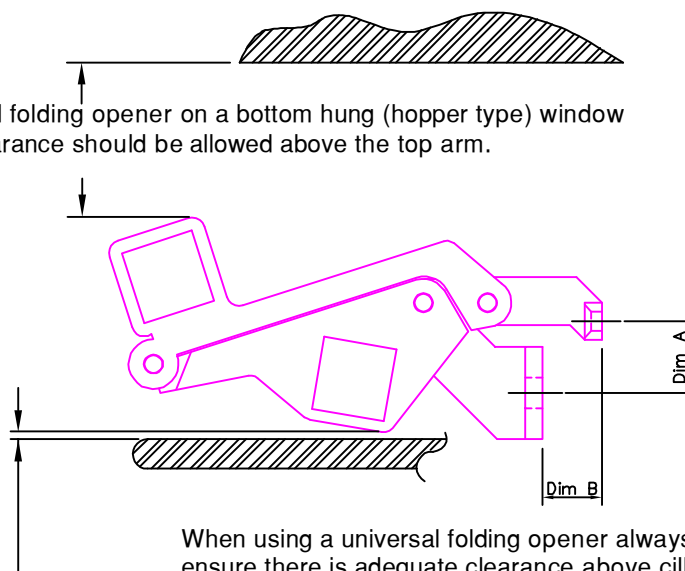
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SOLUTIONS THAT SET NEW STANDARDS

Telephone 024 7643 7900

Universal Folding Opener Quick Reference Matrix

When using the universal folding opener on a bottom hung (hopper type) window a minimum of 85mm clearance should be allowed above the top arm.



When using a universal folding opener always ensure there is adequate clearance above cill boards and any other obstructions.

STYLE	DIM A	REF.	DIM B	REF.	DIM B	REF.	DIM B	REF.	DIM B	REF.	DIM B
110	20mm	11000U	FLUSH	11005U	5mm	11007U	7mm	11011U	11mm	11016U	16mm
112	25mm	11200U	FLUSH	11205U	5mm	11207U	7mm	11211U	11mm	11216U	16mm
113	15mm	11300U	FLUSH	11305U	5mm	11307U	7mm	11311U	11mm	11316U	16mm
116	25mm	11600U	FLUSH								
116	20mm			11605U	5mm	11607U	7mm	11611U	11mm	11616U	16mm
117	35mm	11700U	FLUSH								
117	32mm			11705U	5mm	11707U	7mm	11711U	11mm	11716U	16mm
130	45mm	13000U	FLUSH								
130	38mm			13005U	5mm	13007U	7mm	13011U	11mm	13016U	16mm
191	53mm	19100U	FLUSH								
191	48mm			19105U	5mm	19107U	7mm	19111U	11mm	19116U	16mm
Internal Glaze	16mm	112IGU	13mm								
Internal Glaze	9mm	113IGU	13mm								

Universal folding openers are not available in locking or fold aside form. They are however available in releasable form. The above range covers all 110 & 112 style folding openers which are available (114 & 118 styles are not available).

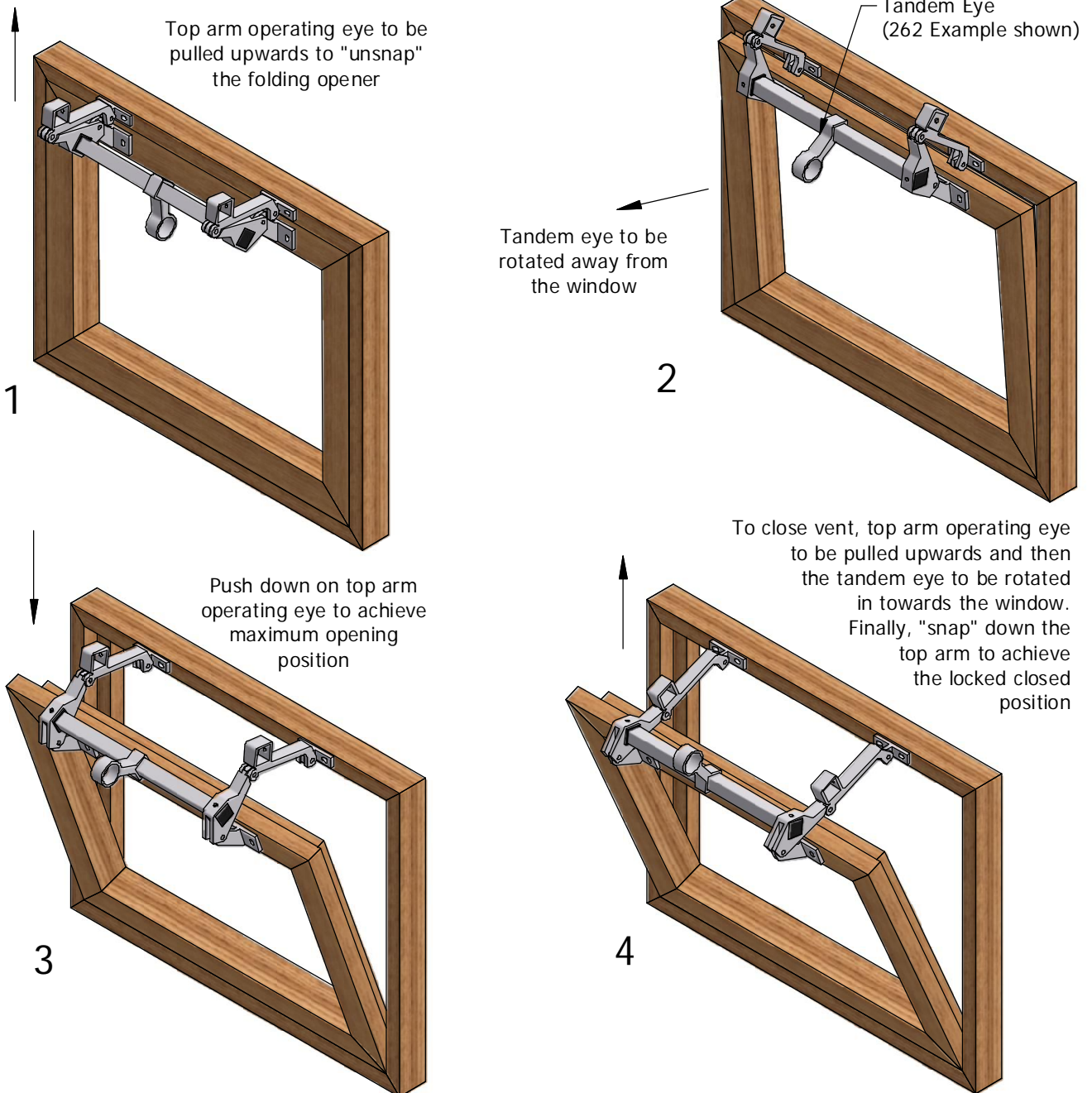
In order to specify a universal folding opener the 112 style reference should be specified with a U suffix.

To specify :- 110/111 type use 112 131 type use 130
115 type use 116 190 type use 191

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OPERATION OF UNIVERSAL FOLDING OPENER

SHOWN ON A BOTTOM HUNG "HOPPER" TYPE
TIMBER WINDOW



When using universal folding openers on a bottom hung (hopper type) window a minimum of 85mm clearance should be allowed above the top arm. See Data sheet 00076 or Universal folding opener quick reference matrix in the folding opener manual for more details.

We now have a Windows Media Player file which shows clearly, by the aid of solid model animation, the operation and motion of the Universal Folding Opener. Please contact our Technical Department for further details.

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SOLUTIONS THAT SET NEW STANDARDS

AVAILABILITY

Standard Folding Opener products in clear anodised finish are available on a lead-time of 5 working days. Non-standard products such as lockable, foldaside, releasable and quick release in a clear anodised finish are available on a lead-time of 10 working days.

For paint finishes, add a further 6 working days to the lead times given above.

APPLICABLE STANDARDS

Caldwell Manufacturing operates a BS EN ISO 9001:2008 accredited quality assurance system and all products supplied are controlled through the manufacturing processes by this system.

The aluminium extrusions used for the key components are produced in accordance with BS EN 755-9:2008.

The anodic coatings on the components are all carried out in accordance with BS EN ISO 7599:2010 and will meet the requirements of BS7412:2007 for corrosion protection levels.

TESTING

Each folding opener is tested for function prior to dispatch. Folding Openers have been cycle tested in excess of 100,000 cycles without defect.

WARRANTY DETAILS

All Caldwell Hardware Folding Opener products are warranted free from defects for materials and workmanship for a period of 5 years from date of supply. For full details of the warranty, please contact our Customer Service team.

MAINTENANCE

Caldwell Hardware Folding Opener products are free from routine maintenance and when installed in accordance with our guidelines should continue to perform for many years without problem. Exposure to atmospheres containing abrasive materials and coastal atmospheres will accelerate wear and tear and regular cleaning with a non-abrasive, pH neutral, cleaning agent is recommended.

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SOLUTIONS THAT SET NEW STANDARDS

Folding Opener Accessories Order Form

Company Name	
Delivery Address	
Tel No.	
Fax No.	

Order No.	
Date:	
Required Delivery Date:	
Contact:	

<u>Description</u>	<u>Length</u>	<u>Finish</u>		<u>Colour</u>	<u>Caldwell Part No</u>	<u>Total Qty.</u>	<u>Price Each</u>	
Tandem Bar with Centre Hole (Silver Anodised)	_____MM CTRS	✓		Silver	250		£	
	_____MM CTRS	✓		Silver	250		£	
	_____MM CTRS	✓		Silver	250		£	
Tandem Bar with Centre Hole (Powder Coated)	_____MM CTRS		✓		290		£	
	_____MM CTRS		✓		290		£	
	_____MM CTRS		✓		290		£	
Tandem Bar No Centre Hole (Silver Anodised)	_____MM CTRS	✓		Silver	260		£	
	_____MM CTRS	✓		Silver	260		£	
	_____MM CTRS	✓		Silver	260		£	
Tandem Bar No Centre Hole (Powder Coated)	_____MM CTRS		✓		270		£	
	_____MM CTRS		✓		270		£	
	_____MM CTRS		✓		270		£	
260 Tandem Eye Kit (small boss pole operator)	N/A				260		£	
262 Tandem Eye Kit (large boss pole operator)	N/A				262		£	
263 Tandem Eye Kit (small boss pole operator)	N/A				263		£	
Pole Operator Small Boss (1400mm Long Standard)	_____MM LONG	✓		Silver	28304_____ANSAT		£	
Pole Operator Large Boss (1400mm Long Standard)	_____MM LONG	✓		Silver	28306_____ANSAT		£	
Hand Operator Kit	N/A	✓		Silver	PE164ANSAT		£	
Tandem Eye Adapter Kit	N/A				PE196		£	
Tandem Bar End Cap	N/A			Black	25064		£	
Modified End Cap	N/A			Black	25064/M		£	
End Cap Screw	N/A			Silver	93086		£	
2mm Packer	N/A			Silver	24012		£	
3mm Packer	N/A			Silver	24022		£	
5mm Packer	N/A			Black Nylon	23124		£	
Note: where _____ is shown please enter relevant length in millimetres.		Silver Anod	Powder Coated					Total Price
		PLEASE TICK REQ'D BOX ✓						£

THIS ORDER IS ACCEPTED ONLY UNDER OUR CURRENT 'TERMS & CONDITIONS OF SALE' COPIES AVAILABLE UPON REQUEST.

FAX TO CALDWELL HARDWARE (U.K.) LIMITED ON 024 7643 7969

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SOLUTIONS THAT SET NEW STANDARDS

TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Sash won't fully close when folding opener is closed.	Wrong brackets for window step size	Check step size and use correct folding opener part numbers
Sash is fully closed but folding opener is not	Wrong brackets for window step size	Check step size and use correct folding opener part numbers
Folding opener won't lock out in open position.	Sash movement being restricted.	Remove restriction or fit folding opener type with reduced opening characteristics.
Folding opener won't lock out in open position.	Sash height too small (refer to min dimensions in manual)	Use alternative window hardware.
Folding opener fouls on cill board when closing window	Insufficient clearance between folding opener and cill board	Change folding opener to a more suitable type. (contact Caldwell Hardware for advice)
Tandem eye not accessible when window is open	Wrong folding opener type or wrong tandem eye type being used.	Refer to accessories details in manual and replace with correct parts.
Pole operator does not fit Tandem Eyes	Large boss pole operator being used with small boss tandem eye	Use a small boss pole operator.
Folding opener becomes loose after a time in service on a PVCu window.	Fixing screws not engaged into reinforcement.	Use screws of the correct length.
Folding opener hits top of reveal when used on bottom hung sash.	Insufficient clearance.	Use Universal type folding openers and fit to ensure a minimum of 85-mm clearance between folding opener and reveal.

AUTHORITIES



All Caldwell products are manufactured according to BS EN ISO 9001:2008 certified Quality Management Systems.

Where product standards do not exist Caldwell have set in house procedures.

Further information on specific testing is often available from our technical department.



Caldwell are also members of The Council for Aluminium in Building (CAB) which brings together three existing trade associations, the Architectural Aluminium Association, The Patent Glazing Contractors Association and the Aluminium Window Association, into a unified voice.

