

Architectural Binder Section Wood Folding Systems

Wood Folding Systems

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Wood Framed Folding NanaWall Systems That Make Large Openings Possible

Different Wood Framed Folding Door Systems and a Paired Panel System are Available.

NanaWall Systems, Inc. offers different wood framed folding door systems:

NW Wood 540 - Slimmest Wood Frame Folding Glass Wall

NW Acoustical 545 - Wood Frame Glass Wall for Interior Acoustical Separation

NW Clad 740 - Slimmest Aluminum Clad Frame Folding Glass Wall

WD65 - The Folding/Paired Panel Wood Framed System for Special Applications

Large Exterior Openings are Possible

With NanaWall folding systems, openings can range from as few as two panels to as many as twelve panels, and can be as wide as 43' (13 m). With additional paired panels, virtually unlimited widths are possible.

Engineered, Tested Systems from a Single Source Supplier

NanaWall Systems have been engineered for superior performance. Some units have been independently tested for air and water penetration resistance, structural deflection, thermal performance and forced entry. All the systems have been NFRC certified and labeled and tested for acoustic performance.

Secure / Single Hand Operation

Multiple point locking that operates with a turn of a handle. The top and bottom bolts between each bi-fold pair of panels have a full 24 mm throw. Independent tests confirm that the locking system easily passes even strict California forced entry testing requirements. No surface mounted flush bolts are used for standard units.

Versatile Functions

Versatile functions with swing entry/exit panel(s) option and with flexibility to fully or partially open. Ease of operation to quickly open or close wide openings.

Multiple Stacking Configurations

Over fifty stacking configurations for inward opening and outward opening. Unhinged paired panels option and for maximum stacking flexibility and larger opening walls for WD65 and with FourFold and SixFold Panel Sets for the Generation 4 systems. Window door combination, 90°, 135°, segmented or other angled units.

Outstanding Appearance

European styling and handsome, sleek lines allow glass

areas to be maximized. All folding and locking hardware is integrated into the profiles for a clean look and for narrow stacking. No surface mounted hinges are used.

Continued, Long-Term Satisfactory Operation

For WD65 top hung systems, the main weight is carried by the head track, so smooth sliding and folding operations are assured even when some dirt or debris might collect in the bottom track. Generation 4 wood systems are floor supported with bottom rollers on two stainless steel wheels with a unique Gothic arch design, this allows the system to glide quietly and smoothly with less friction while equally distributing weight on the stainless steel track. State-of-the-art hardware is used with patented, sealed, ball bearing running carriages. Long-term ease of operation is also assured with compensation and adjustment features.

Easy to Install, Complete System

Easy to install with complete, precision built systems and pre-fitted hardware.

Design Flexibility

The designer has flexibility with custom sizes and glazing choices; options for performance, low profile saddle, and flush sills; a large selection of muntin layouts; and details such as horizontal mullions, SDL muntins with spacer bars, solid panels, higher bottom rails, or other custom layouts.

Cross-Grained Solid Wood

Only cross-grained, solid, triple-layer wood is used. No veneers are used.

Choice of Quality Woods and Wood Finishes

Choose from Sapeli Mahogany, Meranti, European Pine, Red Grandis, or other selected woods with an environmentally friendly sanding sealer or base coat applied; see "Wood Finish Options" in the General Introduction. No veneers are used.

Hardware Options

A choice of different locking options are available depending on need. Different handle finishes are also available; see "Hardware" in the General Introduction. Depending on the configuration selected, door closers can be incorporated, and units can be prepared for panic devices provided by others. Custodial hardware is also available.

Complete, Coordinated Glass Walls

With the WD joining system, complete, coordinated glass walls can be provided with various folding doors and folding window combinations, matching French doors, transoms, side lites, and corner posts; see the Matching Windows & Doors and the NanaWall HSW66 sections.

Wood Folding Systems

All of the standard WD wood folding systems have been designed, engineered and manufactured to the highest standards. Each system, however, has its own special, unique features and may be more suitable for certain applications than others. Below is a comparison of systems and features. See the individual sections for further system details.

	NW Wood 540	NW Acoustical 545	NW Clad 740	WD65
Profile thickness	3 3/8" (86 mm)	3 3/8" (86 mm)	3 3/8" (86 mm)	2 5/8" (66 mm)
Maximum panel height	9' 10" (3000 mm)	9' 10" (3000 mm)	9' 10" (3000 mm)	10' (3050 mm)
Maximum panel width	3' 3" (1000 mm)	3' 3" (1000 mm)	3' 3" (1000 mm)	3' 7" (1100 mm)
Thermal performance value as low as	.19	-	.20	.23
Flush sill option	No	Yes	No	Yes
Running carriage support	Bottom supported	Bottom supported	Bottom supported	Top hung
Inward and outward opening	Yes	Yes	Yes	Yes
Floating left/right FourFold or SixFold panel sets	Yes	Yes	Yes	No
Some panels inward & some outward opening	No	No	No	Yes
Possibility of unhinged paired panels	No	No	No	Yes
FoldFlat Option (stacking of panels outside the opening) flat against wall or fixed panel	No	No	No	Yes
Possibility of 90° & 135° turn (panels meeting at corner)	No	No	No	Yes
Segmented angles between each folding pair (between 135° & 180°)	No	No	Yes	No
Florida product approval	Yes	No	Yes	No
NFRC certified and labeled	Yes	Yes	Yes	Yes
Acoustical performance	-	STC 31 to STC 41	-	STC 36
LEED scoring	-	STC 41 qualifies for IEQc9 and EQc9	-	-
Cycle testing	500,000 cycles	500,000 cycles	500,000 cycles	-
ADA Compliant	Yes	Yes	Yes	Yes

Suggested Selection Procedure

As there are several different WD wood systems available from NanaWall Systems, Inc. – each with its own special features, study the Comparison Page, the different features of each system, the specifications, the section drawings, the sizes and configurations available, etc. and choose a system most suitable for your particular project.

Steps in Selecting a WD Wood Folding System

1. Select a system and whether single or double glazed for the WD65 system and whether double or triple glazed for the Generation 4 system.
2. Determine the frame width and height.
 - a. From the rough opening height, measured from subfloor, subtract 1/2" - 1" to obtain the frame height (note that shim space is determined by any code requirements and preference). Adjust height as required if the bottom of the frame is not on the same level as the subfloor, especially with a flush sill.
 - b. From the rough opening width, subtract 3/4" (suggested shim space of 3/8" on each side) to obtain the frame width.
3. From the appropriate line on the Maximum Size Chart for your chosen system, for your specific frame height and frame width, determine the minimum number of panels needed. Please note that any custom size is possible up to the maximum size line shown.
4. From the different configurations shown that are available for that number of panels, select a configuration. Configuration determination is made with viewing from the inside. Note the lower size restrictions on some systems if a configuration with a swing panel not attached to a side jamb is selected. ("B" line). If this is the case you may need to adjust your sizes, number of panels or configurations if you are not within the "B" line.
5. Select an inward or outward opening unit. The first letter in the model number indicates inward or outward opening. "I" is inward and "O" is outward. After the "I" or "O" in the model number, the number preceded by "L" indicates the number of panels folding to the left and the number preceded by "R" indicates the number of panels folding to the right. For example, 1L3R indicates 1 panel folding to left and 3 panels folding to right, while its mirror opposite 3L1R indicates 3 panels folding to left and 1 panel folding to right.
6. From the elevations and cross-sections, actual and nominal heights and widths of the individual panels can be determined. As panels overlap and some configurations include running astragals, panel sizes are not necessarily all equal and vary with each configuration. Panel height also

vary with the head jamb size and sill used. For each system, see Relationship of Frame, Panel, and Glass Daylight Opening Sizes page.

7. Select a sill option and finish.
8. Select a wood and finish desired.
9. Select the locking system for the main entry panel.
10. Select the handle type and finish of handles and hinges from the standard colors available.
11. Select any other options desired such as:
 - a. Special features available for the system such as FoldFlat, segmented curves, unhinged pairs of panels, FourFold, SixFold units with 90° or 135° turns, etc. Note the restrictions on some of these options.
 - b. Higher bottom rail.
 - c. Simulated divided lites.
 - d. Matching doors and windows.
 - e. Transoms and sidelites.
 - g. Screens by others.

Example

The WD65 with double glazing is to be used for an opening with rough dimensions of 7' 1" in height and 10' 3/4" in width.

Frame Height = FH = 7' 1" - 1" (assuming 1" of shim space) = 7' 0"

Frame Width = FW = 10' 3/4" - 3/4" (assuming 3/4" of shim space) = 10' with double glazing.

Looking at the "A" line on the Maximum Size Chart for WD65, for a frame height of 7' 0", a unit with at least 4 panels is necessary.

(For a 3 panel system, the frame width will need to be reduced to 9' 10".)

From the configurations available with 4 panels, Model 1L3R is chosen. The size is within the "B" line size.

From information on elevations and cross-sections for Model 1L3R, the following determination can be made:

Nominal panel width = $(FW - 4 \frac{1}{4})/4 =$
 $(10' - 4 \frac{1}{4})/4 = 28.93"$ or $2' 4 \frac{15}{16}"$

Glass width is $2' 4 \frac{15}{16}" - 4 \frac{1}{8}" = 2' 13 \frac{1}{16}"$

Panel width of panel hinged to side jamb attached to other 2 panels = $2' 4 \frac{15}{16}" - 2 \frac{3}{8}" (62 \text{ mm}) = 2' 2 \frac{9}{16}"$

Glass width of this panel is $2' 2 \frac{9}{16}" - 4 \frac{1}{8}" = 1' 10 \frac{7}{16}"$

If the standard sill used, Panel Height =

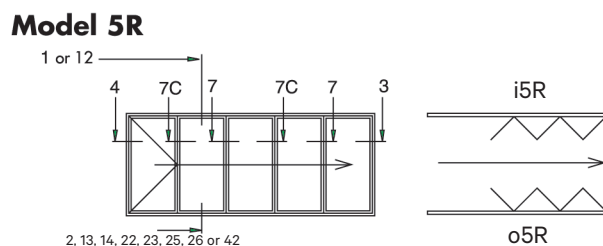
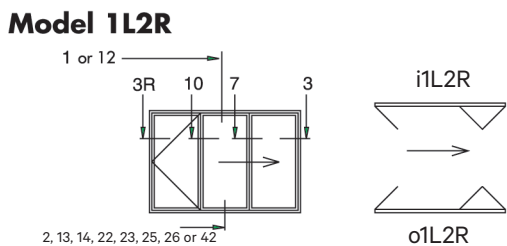
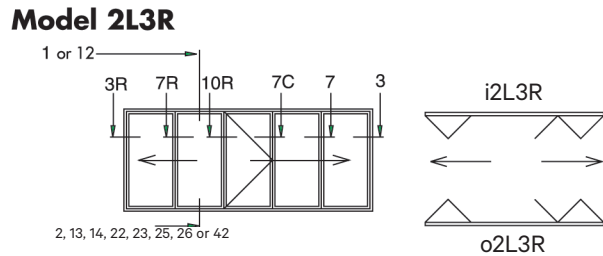
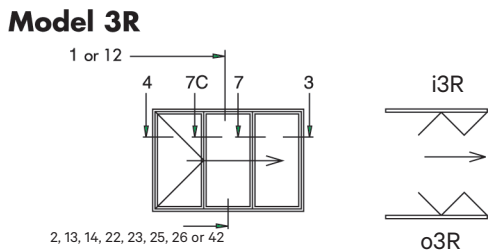
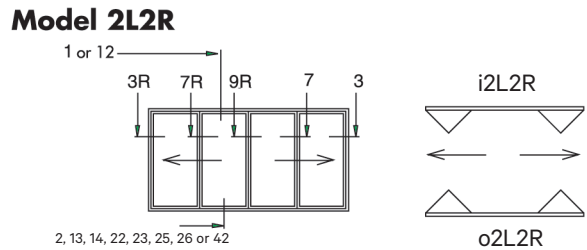
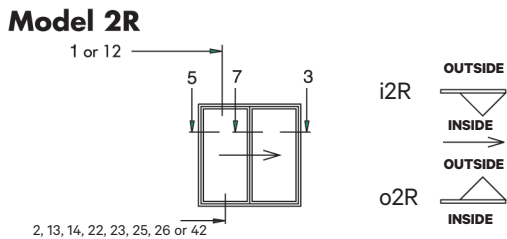
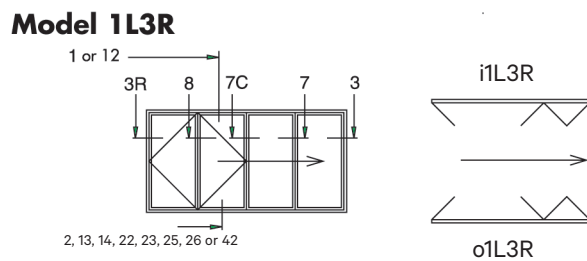
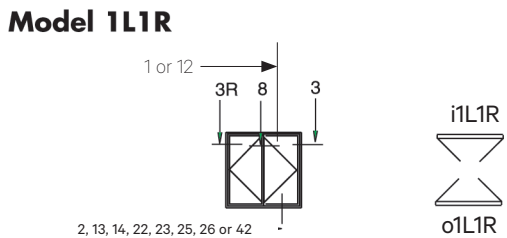
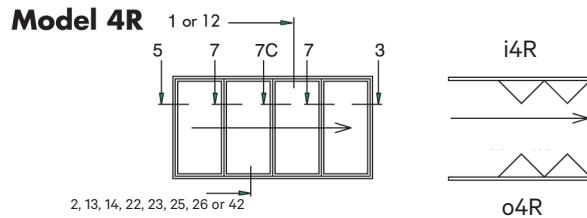
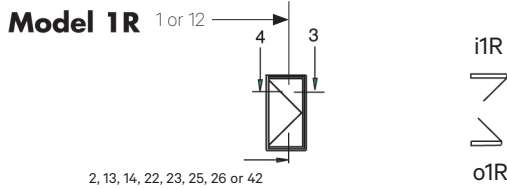
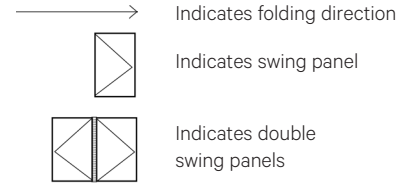
Frame Height - $4 \frac{1}{4}" = 7' - 4 \frac{1}{4}" = 6' 7 \frac{3}{4}"$

Glass Height is $6' 7 \frac{3}{4}" - 4 \frac{1}{8}" = 6' 3 \frac{5}{8}"$

Standard Configurations Possible for Wood Folding Systems

Elevation Drawings of Models with Majority of Panels Folding to Right (looking from inside)

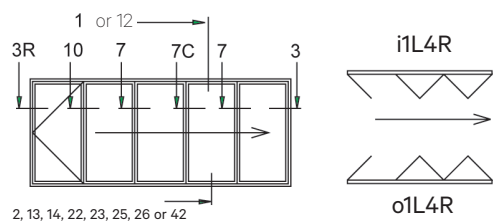
Shown to right of each elevation are horizontal cross-section schematics of the folding operation of the panels. Shown are inward (“i”) and outward opening (“o”) units with the upper part being the outside and lower part being the inside as shown on Model 2R below. **For inward opening section details, look at details with a “.0” suffix and for outward opening section details, look at details with a “.1” suffix.**



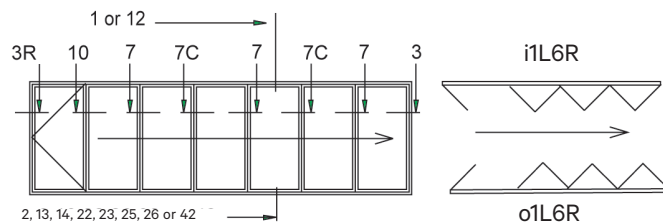
Standard Configurations Possible for Both Wood Folding Systems

Elevation Drawings of Models with Majority of Panels Folding to Right (looking from inside)

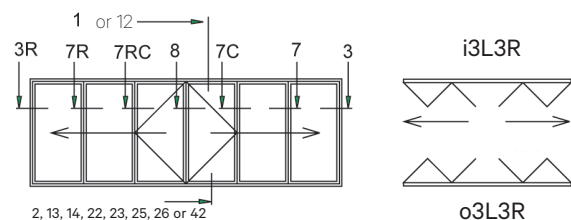
Model 1L4R



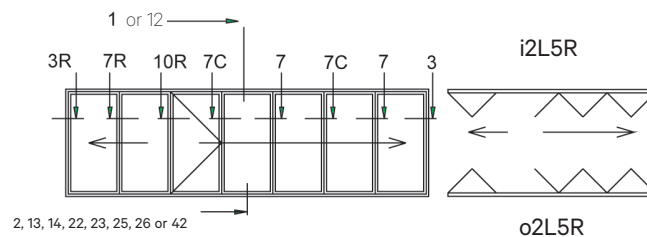
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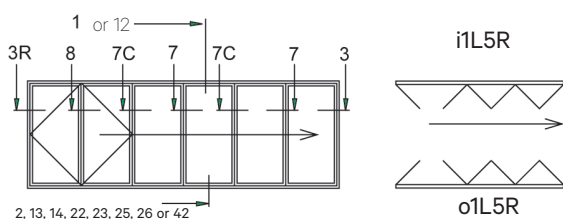
Model 3L3R



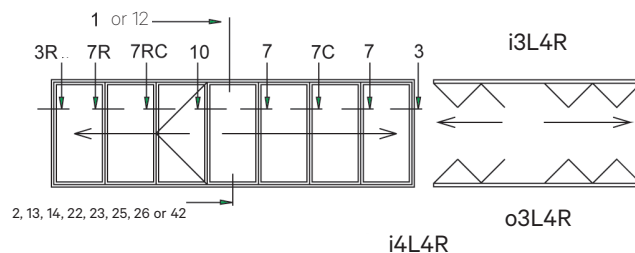
Model 2L5R



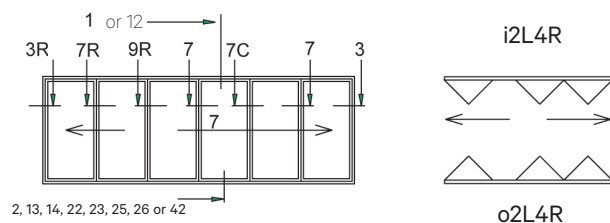
Model 1L5R



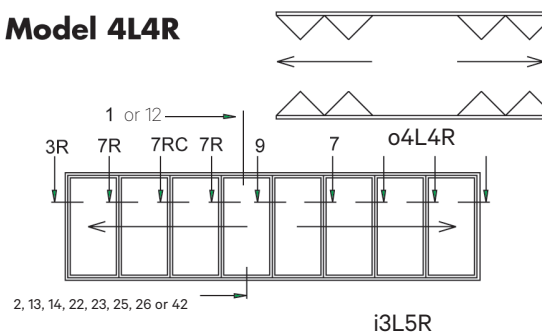
Model 3L4R



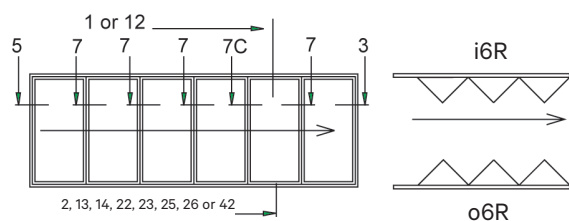
Model 2L4R



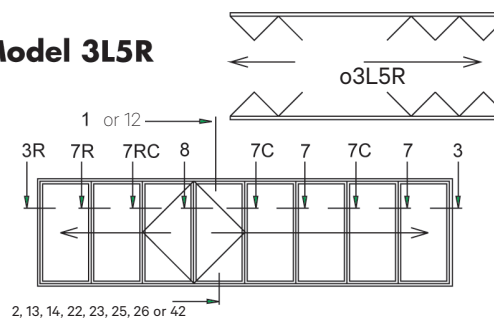
Model 4L4R



Model 6R

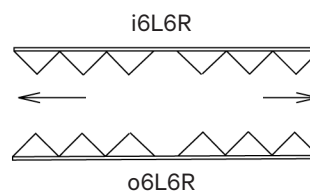
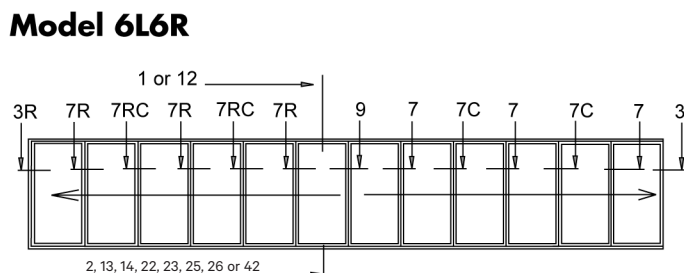
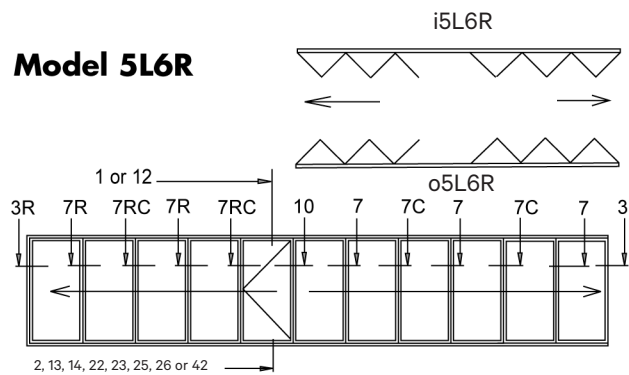
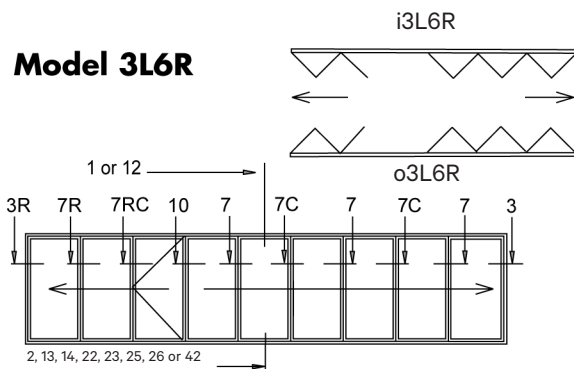
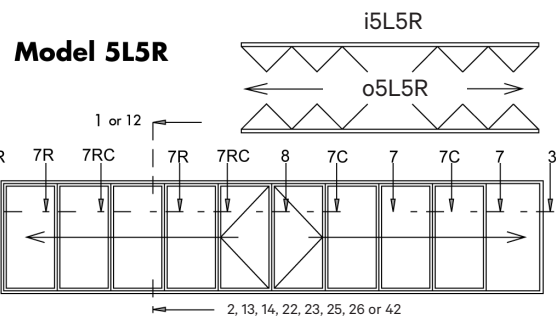
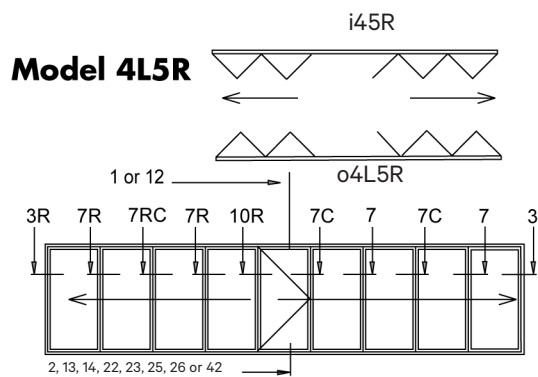
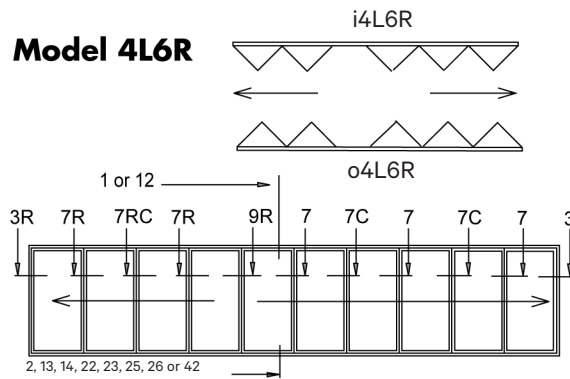
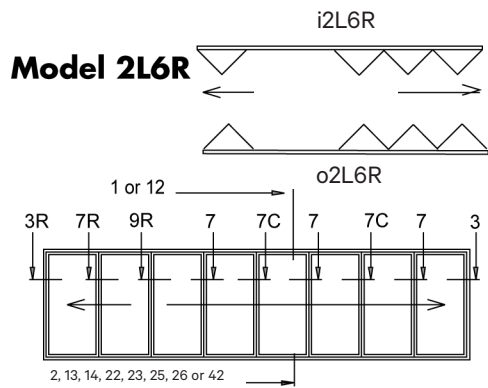


Model 3L5R



Standard Configurations Possible for Both Wood Folding Systems

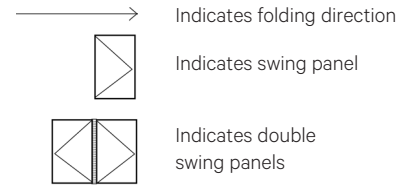
Elevation Drawings of Models with Majority of Panels Folding to Right (looking from inside)



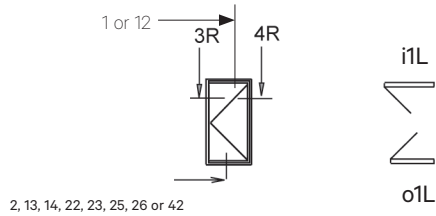
Standard Configurations Possible for Both Wood Folding Systems

Elevation Drawings of Models with Majority of Panels Folding to Left (looking from inside)

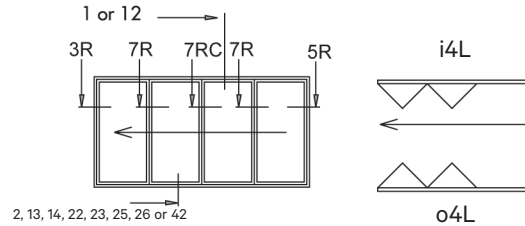
Shown to the right of each elevation are horizontal cross-section schematics of the folding operation of the panels. Schematics are shown for both inward ("I") and outward opening ("A") units, with the upper part being the outside and the lower part being the inside, as shown on Model 2L below. For inward opening section details, look at details with ".0" suffix and for outward opening section details, look at details with ".1" suffix.



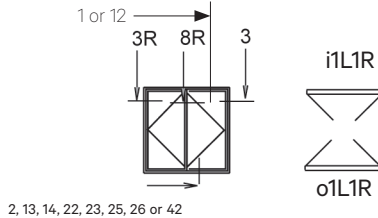
Model 1L



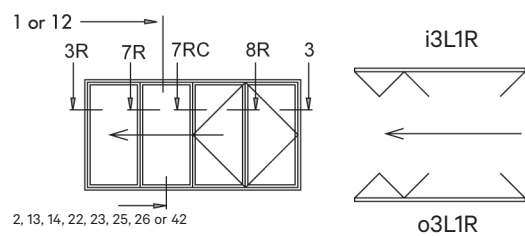
Model 4L



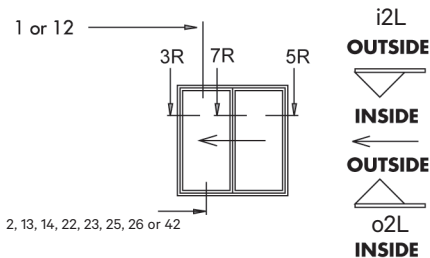
Model 1L1R



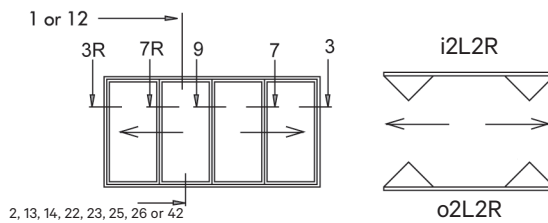
Model 3L1R



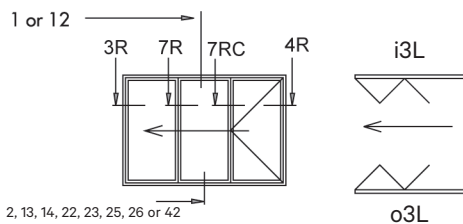
Model 2L



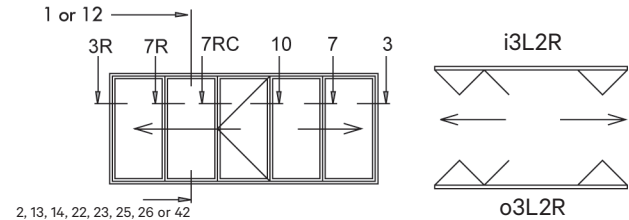
Model 2L2R



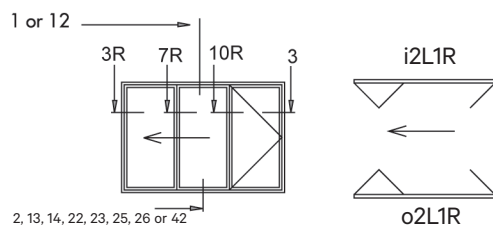
Model 3L



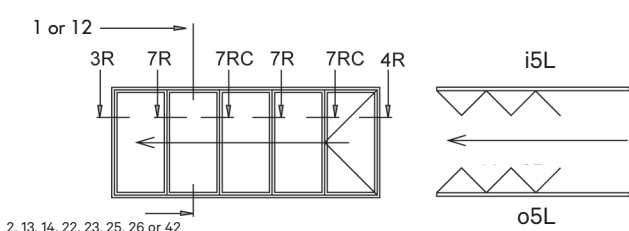
Model 3L2R



Model 2L1R



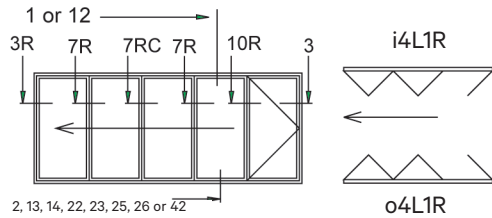
Model 5L



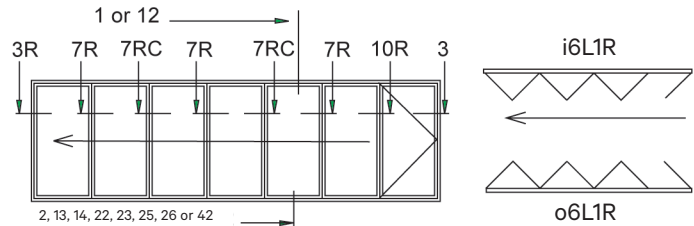
Standard Configurations Possible for Both Wood Folding Systems

Elevation Drawings of Models with Majority of Panels Folding to Left (looking from inside)

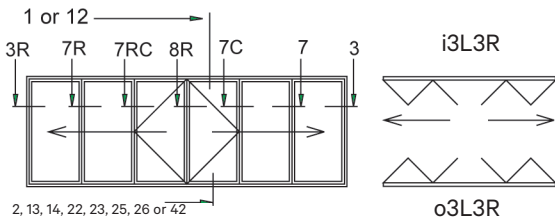
Model 4L1R



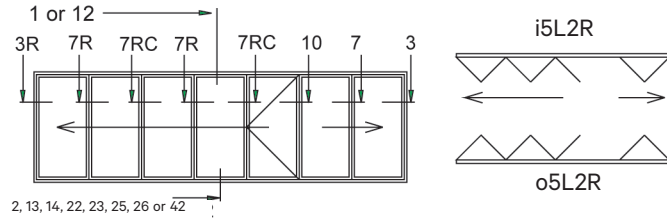
Model 6L1R



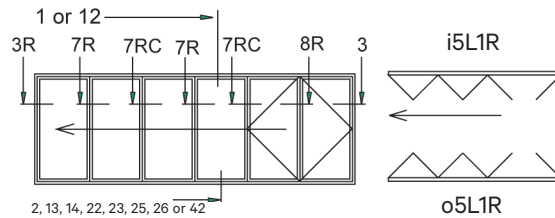
Model 3L3R



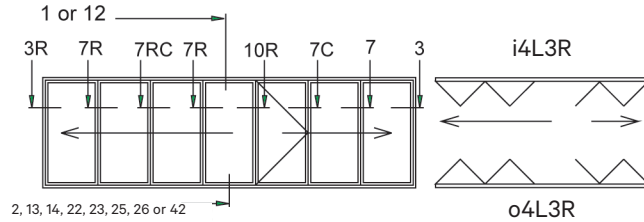
Model 5L2R



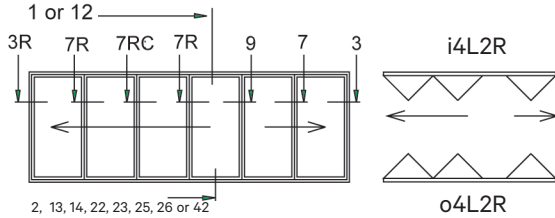
Model 5L1R



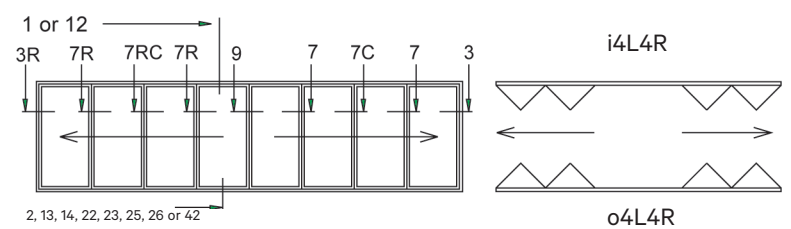
Model 4L3R



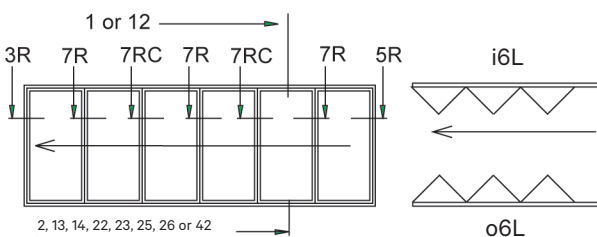
Model 4L2R



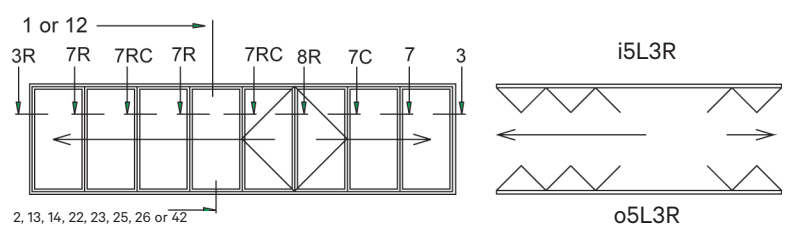
Model 4L4R



Model 6L

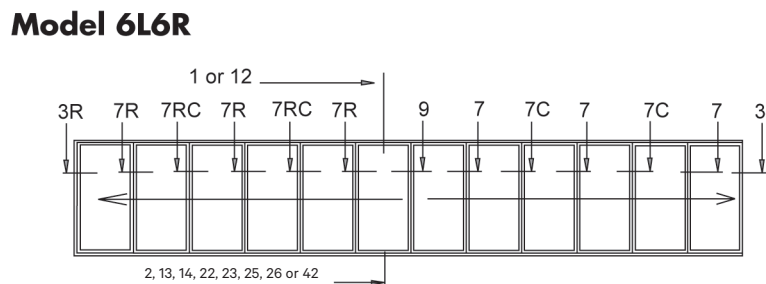
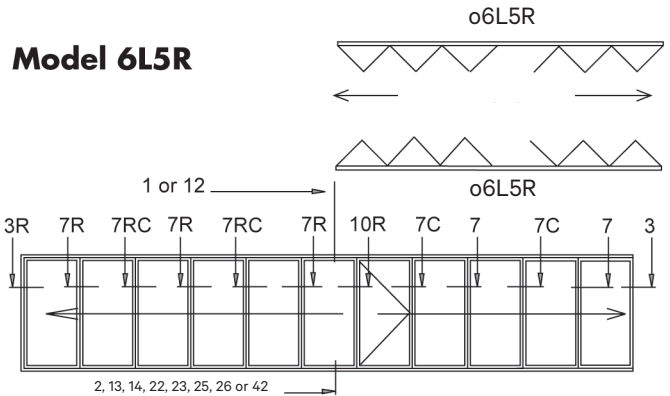
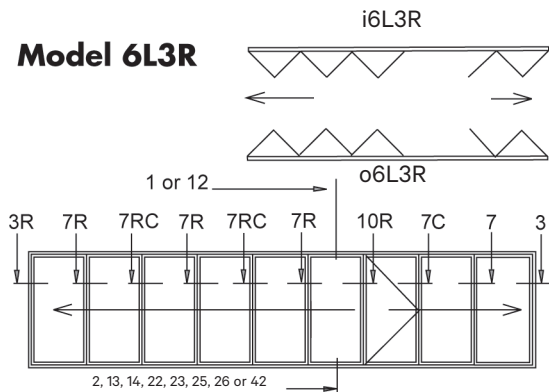
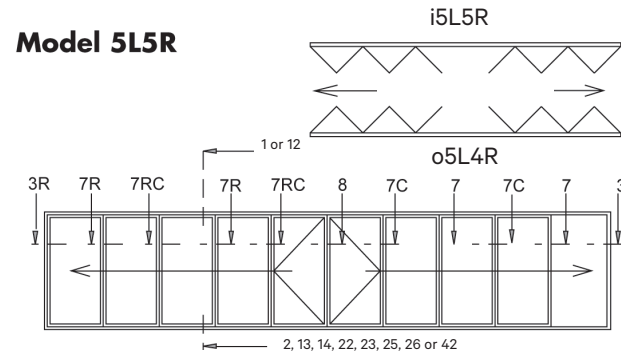
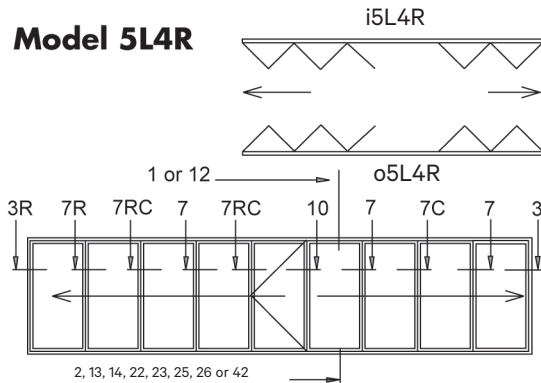
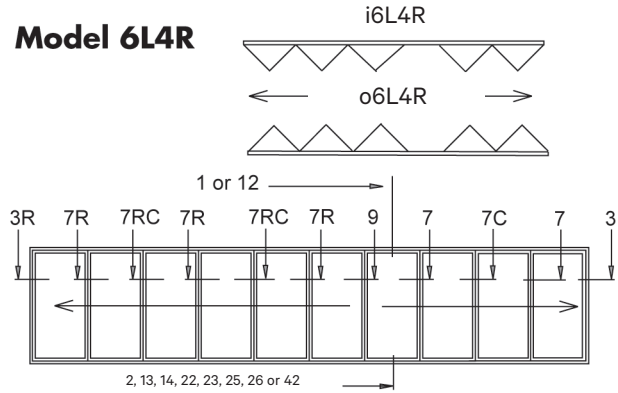
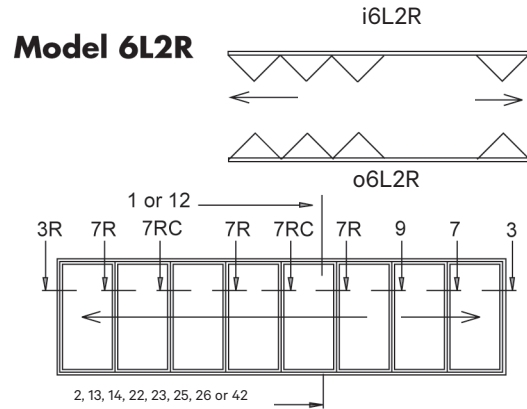


Model 5L3R



Standard Configurations Possible for Both Wood Folding Systems

Elevation Drawings of Models with Majority of Panels Folding to Left (looking from inside)

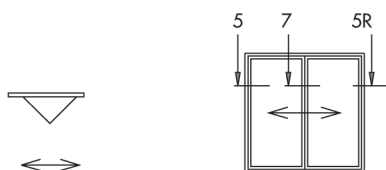
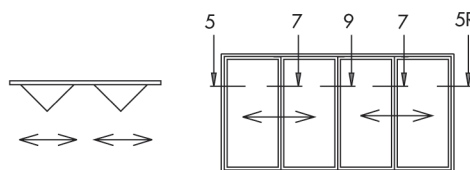
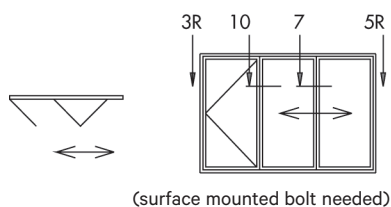
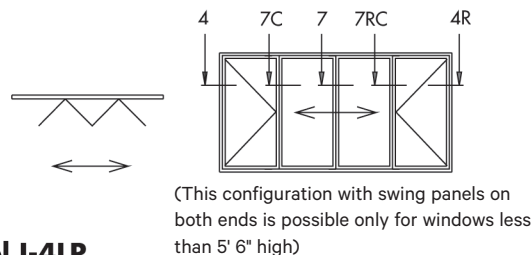
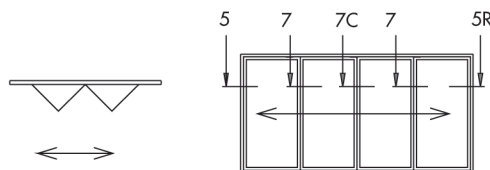
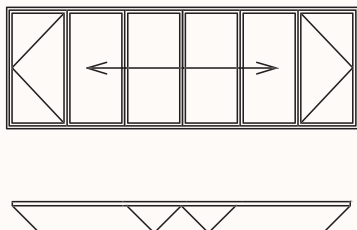
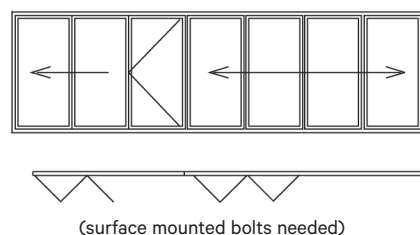


Stack Panels On Either Side with Unhinged Paired Panels:**Other Possibilities with WD65**

In configurations with an even number of panels on one or both sides, pairs of panels need not be hinged to a side jamb or other panels. Flexibility in folding in any direction or position along the track can be achieved. This is achieved by having sets of running carriages at both outside corners of a pair of panels or multiple of pairs of panels. Unhinged paired panels can be combined with hinged configurations for even more options. Below are examples of some possibilities with inward opening units.

Please note that surface mounted bolts are needed in addition to the concealed locking.

Examples: As there can be many design possibilities, please submit your preliminary ideas and sketches to NanaWall Systems, Inc. for evaluation.

Model I-2LR**Model I-2LR 2LR****Model I-1L2LR****Model I-4LRO****Model I-4LR****Model I-1L4LR1R****Model I-3L4LR**

FoldFlat Against the Adjacent Wall: Additional Possibilities with WD65

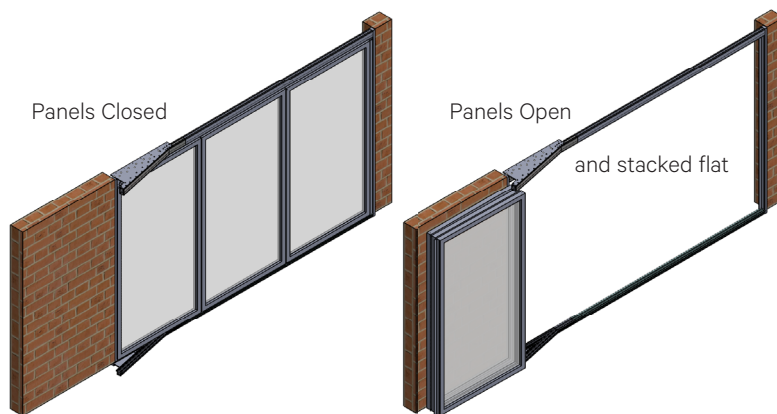
Now possible with configurations up to 3 panels on one side or 6 panels in an opening, panels can be folded flat against the adjacent wall instead of staying perpendicular in the opening - creating a folding system that when opened, all panels are completely out of the opening with no separate structural support above needed.

For larger opening requirements, a FoldFlat on one side can be combined with a standard chain of bi-fold panels.

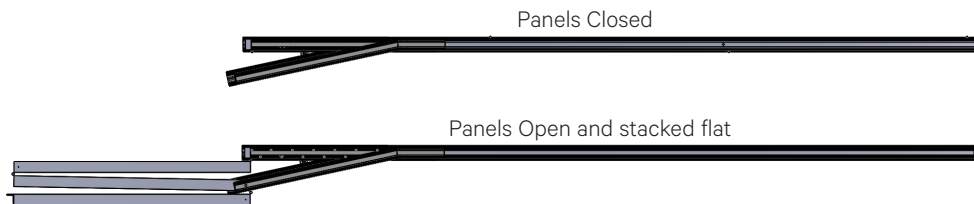
FoldFlat can be used as a door or window system.

FoldFlat is only available with the recessed flush sill (Detail 26).

Example of a FoldFlat unit - Inward Opening with 3 panels stacking flat against the adjacent wall.



Plan View



Some Installation Notes:

For panels to be able to FoldFlat against the adjacent wall, unit will need to be installed flush with the outermost projection of the adjacent wall. An alternate method of attaching the frame to the surrounding wall (instead of screwing through the center of the frame) will need to be used.

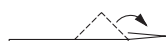
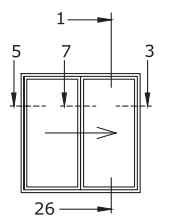
As shown in the drawings above, there will be an extension of the head track and sill outside the opening for the FoldFlat function. The head track extension will be self supporting. The sill extension will need to be recessed. In this sill extension area that is a max. of about 9" from the opening, there can be no changes in the floor level.

There should be adequate space on the adjacent wall to allow the panels to fold flat against the wall (at least the width of the widest panel).

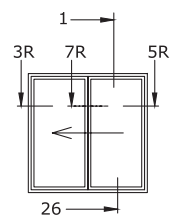
FoldFlat Against the Adjacent Wall:**Some Configurations Possible (Elevations are viewed from the inside.)**

Configurations possible shown below are for outward opening units. The same can be achieved for inward opening units.

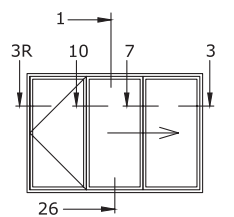
MODEL FF - 2R



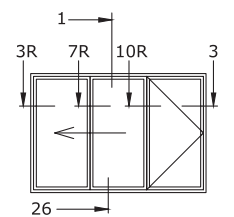
MODEL FF - 2L



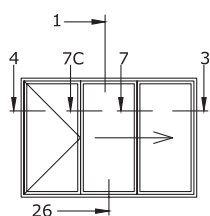
MODEL FF - 1L2R



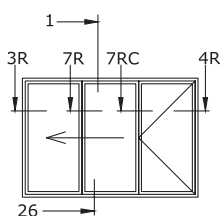
MODEL FF - 2L1R



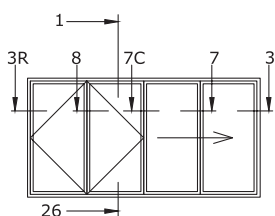
MODEL FF - 3R



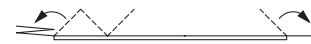
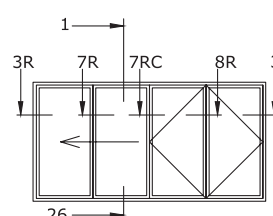
MODEL FF - 3L



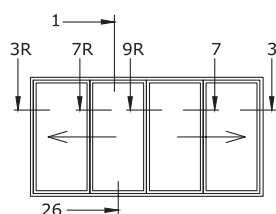
MODEL FF - 1L3R



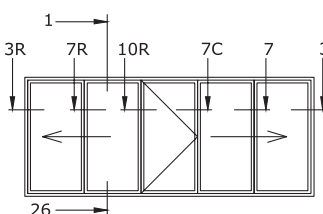
MODEL FF - 3L1R



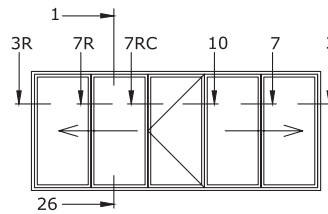
MODEL FF - 2L2R



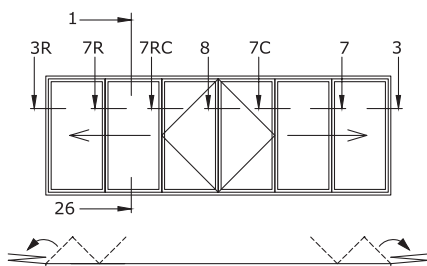
MODEL FF - 2L3R



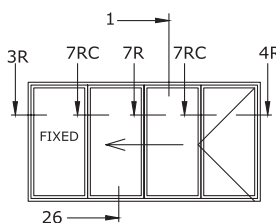
MODEL FF - 3L2R



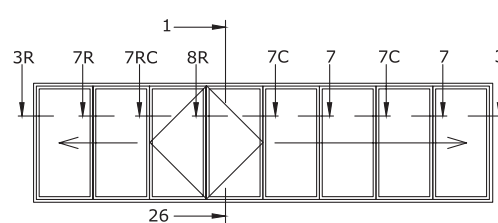
MODEL FF - 3L3R

**Other Configuration Possibilities**

Instead of folding flat against the adjacent wall, the panels can fold flat against a fixed panel. For example, Model 1 Fixed + FF - 3L



A Fold Flat Configuration on one side of the opening can also be combined with any of the other standard configurations on the other side of the opening. For example, FF - 3L + A - 5R.

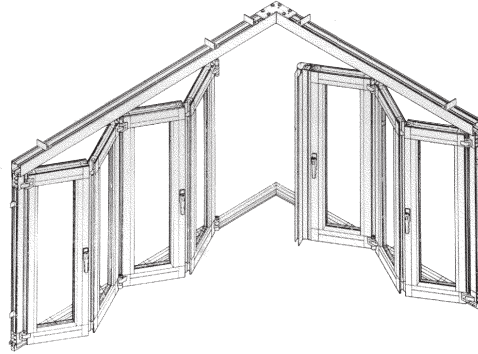
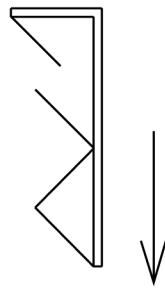
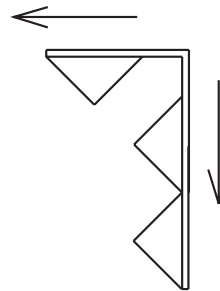


Open Corner with 90° Angle Turns:**Additional Possibilities with Both WD65 and WD66 Wood Folding Systems**

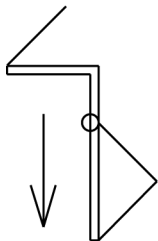
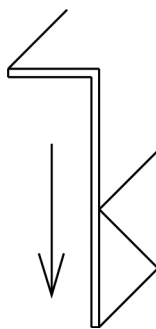
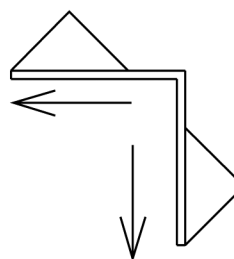
For certain configurations of each of the systems, a 90° angle (or other angle) turn of the head jamb and sill is possible. Create dramatic unique openings by opening two corners of a room without the need of a corner post. See below for some examples.

Please note that angled units are not as weather resistant as standard straight units. As there can be many design possibilities, please submit your preliminary ideas and sketches to NanaWall Systems, Inc. for evaluation.

Examples: As there can be many design possibilities, please submit your preliminary ideas and sketches to NanaWall Systems, Inc. for evaluation.

**Inward Opening****I-1L+4R*****I-1L+3R*****I-2L+4R***

*Only possible with WD65

Outward Opening**A-1L+2R****A-1L+3R****A-2L**

Shown are outside corner configurations. Inside corners are also possible.

Many other configurations are possible and are derived from these above basic configurations. They are created by adding multiple pairs of panels to either side. Mirror images of these configurations are also possible.

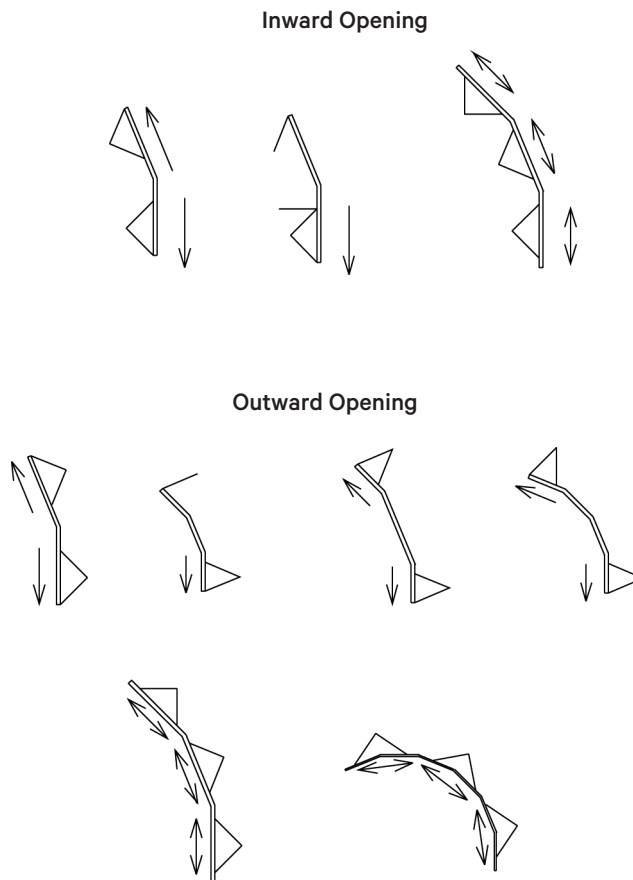
Segmented Curve Units:**Additional Possibilities with WD65**

Possible with the WD65 system are changes in direction or angle of the head jamb and sill up to 45° between each panel, pair of folding panels or series of panels such that with multiple connections, the unit can have segmented curves. Please note that depending on the design criteria, some WD65 segmented curve units may be supplied with the HSW single track system head jamb and running carriage system.

Limitations as compared to straight units are as follows:

1. A segmented curve unit is not as weather resistant and may not withstand the same structural load.
2. Installation is more complicated and past experience in installing folding systems is recommended.
3. Besides frame dimensions, precise angles or radius need to be provided.
4. There are limitations as to which configurations are possible.
5. Costs are substantially more than standard straight units.
6. Stacking may not be as flat as straight units and stiles may not be straight.

Examples: As there can be many design possibilities, please submit your preliminary ideas and sketches to NanaWall Systems, Inc. for evaluation.



Other configurations are possible and are derived from these above basic configurations. They are created by adding multiple pairs of panels to either side and having similar segments.

Some Panels Inward and Some Panels Outward:**Additional Possibilities with WD65**

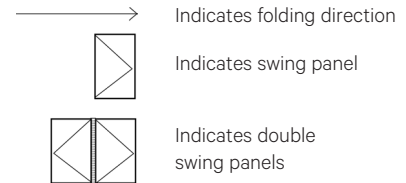
Below are elevation drawings and horizontal cross-section schematics of some possible configurations.

Other configurations possible are made with the addition of one or more pairs of panels to either or both sides or flipping the inward or outward opening on either side.

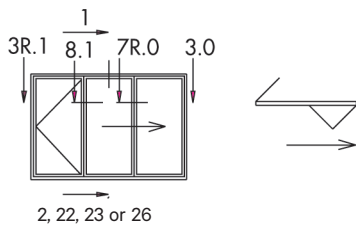
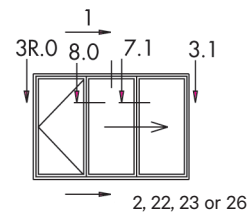
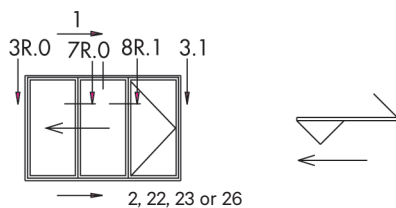
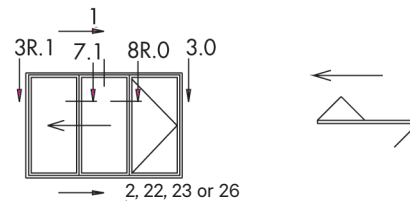
“A” denotes outswing panels and “I” denotes inswing panels.

Please note that the width of panels that are inward opening can be different from the width of panels that are outward opening.

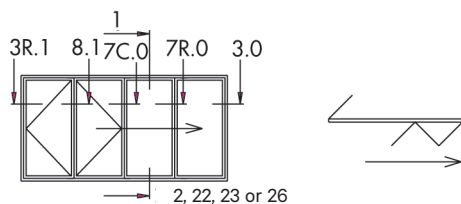
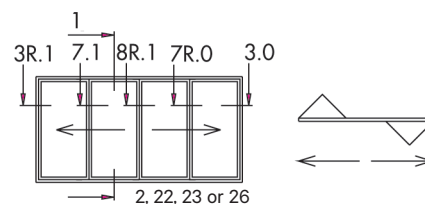
Examples: As there can be many other possibilities, please submit your ideas and sketches to NanaWall Systems, Inc. for evaluation.



Shown with Model L A-1L + I-2R are the Other Three Possibilities

Model A-1L + I-2R**Model I-1L + A-2R****Model I-2L + A-1R****Model A-2L + I-1R**

Other configurations for majority of panels folding to right with inward opening panels on the right

Model A-1L + I-3R**Model A-2L + I-2Rp**

Folding Door / Window Combination in One Unit - Without a Fixed Post Separating the Doors from the Windows (NanaWall Kitchen Transition)

The Folding Door / Window combination opens wide, seamlessly turning a kitchen into an indoor / outdoor space. It can also be used in other types of applications.

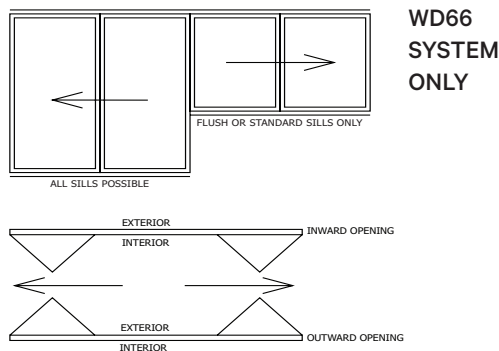
Please note some limitations as follows:

1. Is only possible with certain systems, configurations, and sills as shown below.
2. Lower corner where window meets door will not be as weather resistant as compared to a unit with all panels equal in height.
3. Please note that the location of the handle of the swing door panel has limitations due to the strike plate having to be either on the side jamb profile below the counter or on the adjacent window panel.
4. Handle heights of the door unit and window unit may be different.

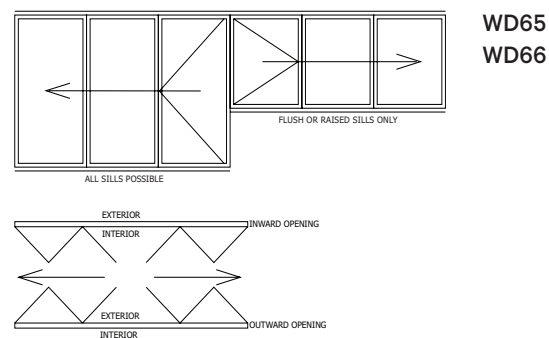
Examples: As there can be many design possibilities, please submit your preliminary ideas and sketches to NanaWall Systems, Inc. for evaluation.

Elevations Looking from inside

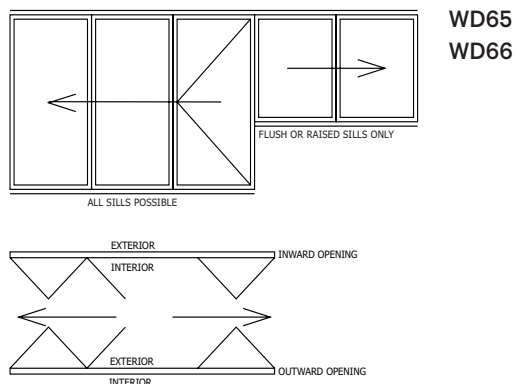
Even number of door panels meeting even number of window panels.



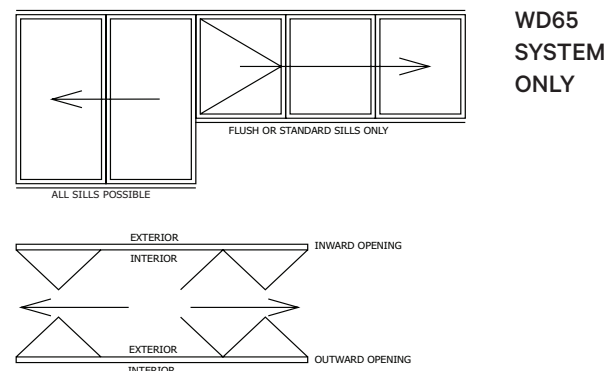
Odd number of door panels (with swing door) meeting odd number of window panels.*



Odd number of door panels (with swing door) meeting even number of window panels.



Even number of door panels meeting odd number of window panels.*



Based on the above basic configurations, other configurations are possible by adding (or subtracting) pairs of panels to either side.

*Please note that for outward opening units, operator will need to stand on the exterior to engage / disengage the window swing panel from the panel catch on the adjacent panel.