Wrought Iron Balusters Library

for Cheif Architect X6

User Guide

and symbol specifications

Introduction to Symbol Usage

These cabinet surrounds can be used in any variety of creative applications — anywhere you can use a cabinet door, you can use these surrounds.

Installing Symbol Libraries

Before you begin using your wrought iron baluster libraries, you must import them into Chief Architect. The wrought iron baluster libraries can be imported into the program in one of the following ways:

- *by double-clicking the downloaded file* `wrought _ iron _ balusters.calibz`
- *by using the **Library** menu in the program as shown in **fig. 2-2**.*

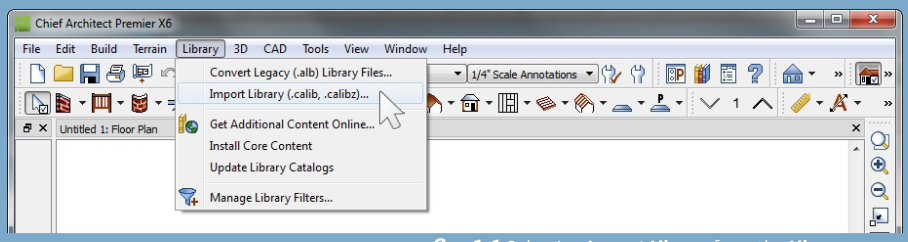


***fig. 1-1** Selecting **Import Library** from the **Library** menu.*

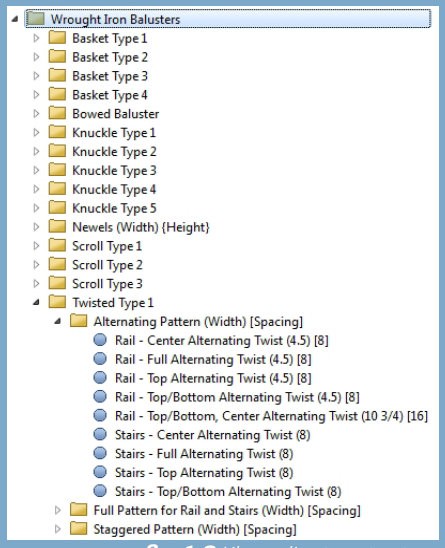


***fig. 1-2** Library directory structure.*

Library Directory Structure

Once imported, the wrought iron baluster libraries will be added into the ***User Catalog*** folder in your library browser.

Inside the ***Wrought Iron Balusters*** folder are subfolders for each component type:

- *baskets*
- *bows*
- *knuckles*
- *scrolls*
- *twists*
- *newels*

Inside each component type folder is one or more of the following pattern types. The symbols for each component type reside in the pattern type folders:

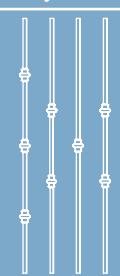
- *alternating patterns*
- *full patterns/single balusters*
- *staggered patterns*

An example directory structure is shown to the left in ***fig. 2-3***.

Symbol Naming Convention

There is a lot of information about each symbol's usage included in its name. This thoughtful naming convention can help you choose the right baluster symbol for the task, and can help size and space them for the perfect fit. Information provided in the symbol name can included:

- *whether the symbol's primary use is for staircases or railings (balustrades)*
- *suggested symbol width, spacing (for balustrades), or height (for newels)*
- *baluster component position (example: top basket, middle knuckle, full twist etc.)*

Symbol Name Example	Symbol
usage *type* *width* **Rail - Triple, Center Double, and Center Knuckles (11 1/2) [16]** *pattern* *spacing*	

Important Information: A symbol's suggested sizing is always included in its name. Suggested symbol width will always be indicated in ***(parentheses)***, suggested symbol spacing will always be in ***[brackets]***, and suggested symbol height will always be in ***{braces}***.

About Rail-Only Baluster Symbols

Baluster symbols identified as ***Rail*** were specifically designed for railing walls. As such these symbols should only be used on balustrades. They will not work on staircases.

Note: Some alternating and staggered pattern symbols are only available for ***Rails.*** You must choose a different symbol for your staircase.

About Staircase-Only Baluster Symbols

Because staircases treat baluster symbols differently than railing walls, some baluster types may include separate symbols for staircases and rails (balustrades).

A baluster symbol designed for staircases only are indicated by ***Stairs*** at the beginning of its name. Baluster symbols intended for staircase use only include the suggested ***width***. They do not include a suggested spacing value. Consider the following example:

Symbol Name Example	Symbol

Note: The libraries include fewer staircase-only symbols than rail-only symbols. This is because many rail-only patterns don't look great sloping downward. In order to coordinate staircase balusters with your balustrade, you must choose either a single baluster symbol, or an available pattern symbol for your staircase.

About General-Use Baluster Symbols

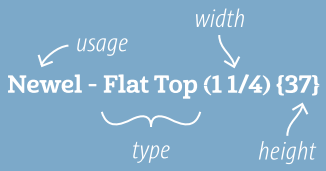
Definition: A general-purpose baluster symbols are symbols having ***no usage designation.*** That is to say, they are neither labeled ***Rails*** nor ***Stairs***.

General-use baluster symbols are designed to work with both balustrades and staircases. They include suggested ***width*** and ***spacing***, although you will not use the suggested spacing value when applying the baluster to a staircase. Consider the following example:

Symbol Name Example	Symbol

What About Newel Symbols?

Newel symbols are stored in your library in a folder called Newels. The naming convention for newel symbols are straight forward, and include the ***suggested width*** in [brackets] and the ***suggested height*** in {braces}. Consider the following example:



Full Pattern/Single Baluster Symbols

Single-baluster symbols contain only one baluster per symbol, and produce a full pattern of identical balusters.

Sizing and spacing for these balusters are straight-forward because the width and spacing values correspond with actual baluster size and spacing.

Multiple-Baluster Symbols

Alternating and staggered baluster patterns require symbols that contain more than one baluster per symbol. Because of this, multiple-baluster symbols must use specific width and spacing values.

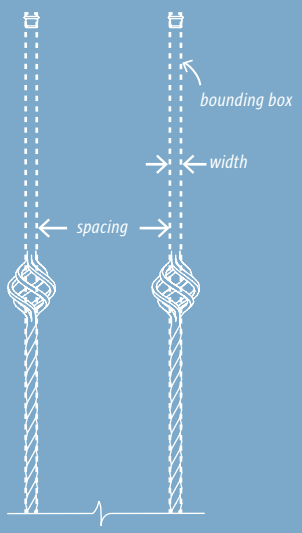
About Suggested Symbol Width and Spacing

When assigning baluster symbols to railing walls and staircases, you will input the suggested width value into the ***Width*** field, and the suggested spacing value into the ***Spacing*** field in the railing wall or staircase dialog box.

In most cases, the suggested width value of single-baluster symbols corresponds to the size of its rod. For spacing purposes, protruding adornments such as baskets or scrolls are not taken into account.

The suggested width for symbols containing multiple balusters ***do not*** correspond to the width of the actual symbol or the balusters it contains. These widths were derived for visually accurate spacing.

In some instances, you may wish to adjust the ***Width*** and ***Spacing*** values of alternating and staggered symbols based on the automatic placement of newel posts.



Further Reading: For more information on suggested symbol width and spacing, see “Symbol Naming Convention” on page 2.

Assigning Balusters to Railing Walls

From the ***Newels/Balusters*** panel of the ***Railing Specification*** dialog box, you will assign a wrought iron baluster symbol to a railing wall by clicking the ***Library...*** button in the ***Balusters*** section, as shown in ***fig. 2-3***.

Note the suggested width and spacing values included in the symbol name, and input them into the ***Width*** and ***Spacing*** fields.

Further Reading: For more information on

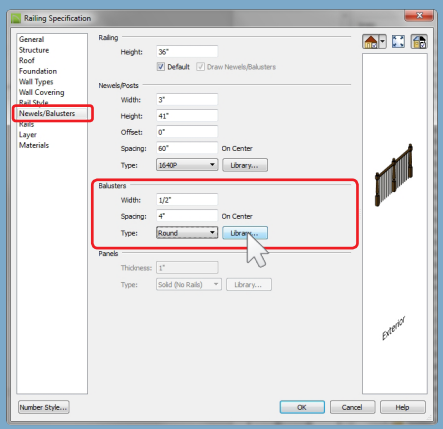


fig. 1-3 *The* ***Newels/Balusters*** *panel of the* ***Railing Specification*** *dialog box.*

Assigning Balusters to Staircases

From the ***Newels/Balusters*** panel of the ***Interior Staircase Specification*** dialog box, you will assign a wrought iron baluster symbol to a staircase by clicking the ***Library...*** button next to the ***Baluster Type*** selection box, as shown in ***fig. 2-4***.

Note the suggested width value included in the symbol name, and input it into the ***Width*** field.

Further Reading: For more information on

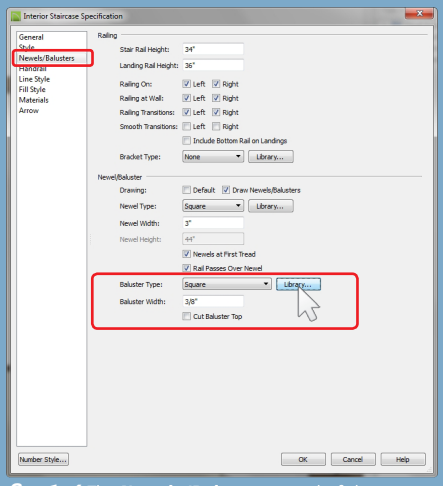


fig. 1-4 *The* ***Newels/Balusters*** *panel of the* ***Interior Staircase Specification*** *dialog box.*

Assigning Newels to Railing Walls

From the ***Newels/Balusters*** panel of the ***Railing Specification*** dialog box, you will assign a wrought iron newel symbol to a railing wall by clicking the ***Library...*** button in the ***Newels/Posts*** section, as shown in ***fig. 2-5***.

Note the suggested width and height values included in the symbol name, and input them into the ***Width*** and ***Height*** fields. You do not need to change the value in the ***Spacing*** field.

Note: Newel spacing does affect baluster placement somewhat, but it is usually best to leave the ***Spacing*** field alone unless you have a reason to change it.

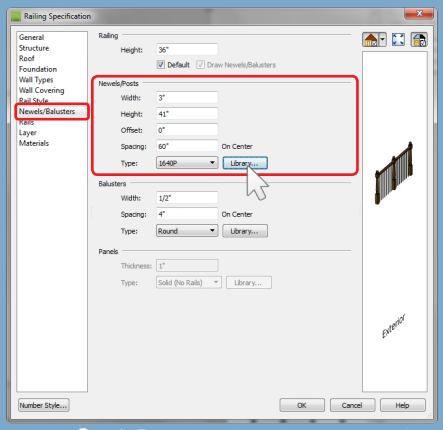


fig. 1-5 *The* ***Newels/Balusters*** *panel of the Railing Specification dialog box.*

Assigning Newels to Staircases

From the ***Newels/Balusters*** panel of the ***Staircase Specification*** dialog box, you will assign a wrought iron baluster symbol to a staircase by clicking the ***Library...*** button in the ***Balusters*** section, as shown in ***fig. 2-4***.

Note the suggested width value included in the symbol name, and input it into the ***Width*** field.

Further Reading: For more information on

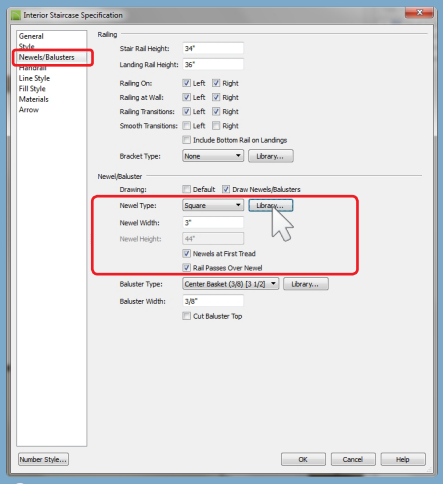


fig. 1-6 *The* ***Newels/Balusters*** *panel of the Railing Specification dialog box.*

More About Using Symbols on Staircases

These cabinet surrounds can be used in any variety of creative applications — anywhere you can use a cabinet door, you can use these surrounds.

Types of Baluster Symbols That Can Be Used on Staircases

Because staircases treat baluster symbols differently than railing walls, only certain types of symbols are appropriate for staircase use.

You will know from the section ***Symbol Naming Convention*** on page 2 that symbols having ***no usage label***, and symbols labelled ***Stair*** can be used on staircases. However, these can be broken down further into various types depending on the number of symbols they contain, and their bounding box and spacing parameters.

Different baluster libraries can contain any or all combinations of these types. Consider the table below:

Usage Type	Symbol Type	Pattern Type	Symbol Description
general use	single-baluster	full pattern	Also known as general-use symbols, these are neither labelled ***Rails*** nor ***Stairs***, and include only one baluster per symbol. They create a full pattern of identical balusters on both balustrades and staircases.
	multiple-baluster[1]	alternating and staggered patterns	Also known as general-use symbols, these are neither labelled ***Rails*** nor ***Stairs***, and include more than one baluster per symbol to achieve alternating and staggered patterns.
staircase only	single-baluster	full pattern	These rare symbols are sometimes necessary when baluster components differ slightly from their balustrade-only counterparts, e.g., angled shoes.
	multiple-baluster[1]	full pattern	To achieve the same full pattern as their balustrade-only counterparts, but with the correct number of balusters per tread, these symbols require more than one baluster per symbol and unique bounding box parameters.
		alternating and staggered patterns	These symbols are identical to their balustrade-only counterparts, but with different bounding box and spacing parameters so balusters are positioned properly on staircase treads.

[1] *multiple-baluster symbols have unique width and spacing requirements that do not coincide with the actual size and spacing of the symbol or its balusters*

Important Information: Remember that alternating and staggered pattern symbols do not have the same wide range of use that full pattern symbols enjoy. The more specialized the symbol—the more balusters per symbol, for example—the more limited it becomes.

Landing-Friendly Symbols

Landings receive much of their information—height, thickness, balusters, newels, handrail, etc.—from the staircases they are attached to. Currently, Chief Architect does not offer the option to choose unique baluster, newel and handrail symbols for landings.

Because of this limitation, some baluster symbols—specifically those designed with special bounding box and spacing parameters so that they work properly with staircases—will simply not work on railed landings.

Full pattern, single-baluster symbols are designed to work properly on staircases with railed landings. However, some ornate single-baluster symbols (scrolls, for example) are offset for proper spacing on stair treads, and to work nicely between newels. This spacing can sometimes mean the balusters will not be placed correctly on landings.

Experiment: If your staircase design requires railed landings, try choosing a landing-friendly baluster. Or, depending on how much the balusters are offset, you may be able to edit the drawing ***Layout View*** once the elevation is sent to Layout.

Baluster Symbols and Curved Stairs

All of the single-balusters symbols—that is to say, those with only one baluster per symbol, and not specifically designated as ***Rail*** nor ***Stair***—will work with curved staircases. This is because, for curved staircases, Chief Architect calculates the number of balusters and spacing, independently for either side of the stair tread. The single-baluster symbols are properly sized for this to be effective.

Additionally, most of the single-baluster symbols specifically designated as ***Stairs*** will work with at least one side of a curved staircase. These are appropriate when one side of a curved staircase is against a curved wall. These applications, however, may require slight adjustments to baluster spacing. See Baluster Spacing on Curved Staircases on page ## for more information.

Trick: You can sometimes use a balustrade-only symbol—that is, a symbol designated as ***Rail***—to achieve the proper pattern and spacing on one side of a curved staircase. See ***Using Balustrade-Only Symbols on Curved Staircases*** on page ## for more information.

First-Newel Friendly Balusters

Definition: On a staircase, first newels are those newels automatically placed at the first tread of each stair section. To enable first newels on a staircase, check the ***Newel at First Tread*** check box in the ***Staircase Specifications*** dialog box.

All of the single-baluster symbols—that is to say, those with only one baluster per symbol, and not specifically designated as ***Rail*** nor ***Stair***—will draw correctly when the ***Newel at First Tread*** check box is checked. Some multiple-baluster symbols are first-newel as well.

Depending on the symbol you choose and newel size, you may find that you have to manually manipulate the balusters and/or newels. For more information, see ***Common Staircase Issues*** beginning on page 8.

If altering or staggered pattern symbols are producing unexpected balusters at the beginning of a staircase, or at the corner of stair landings, ensure that the ***Newel at First Tread*** check box is checked. If you do not actually want a newel drawn at the first tread, simply set the newel width to 0".

Baluster Height and the 'Cut Baluster Top' Check Box

By default, Chief Architect will cut the bottoms of staircase balusters, and stretch the balusters to meet the handrail. This aligns the position of baluster components (turned shapes, twists, baskets, etc.) in such a way that they will follow the downward angle of the handrail.

Note: If the baluster symbol has a stretch plane, the it will be stretched at the stretch plane instead of distorting.

When the ***Cut Baluster Top*** check box in the ***Staircase Specifications*** dialog box is checked, Chief Architect will instruct the staircase to cut the tops of its balusters instead. When the tops of the balusters are cut, the bottoms of the balusters sit directly on the tread. This aligns baluster components on a per-tread basis, making them level.

For some multiple-baluster symbols, the ***Cut Baluster Top*** check box produces unseemly results, and is therefor not recommended. To see which symbols this applies to, see the ***Symbol Component Specifications*** tables beginning on page 12.

For symbols whose number of balusters equals the number of balusters required for a tread, the ***Cut Baluster Top*** check box has no effect.

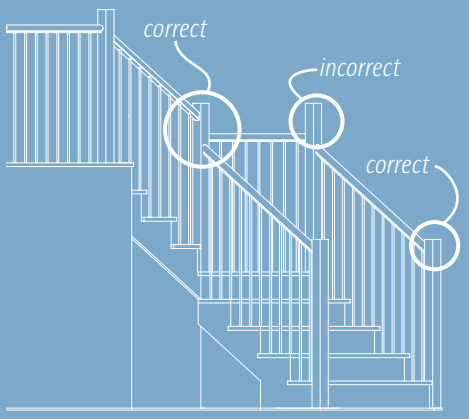
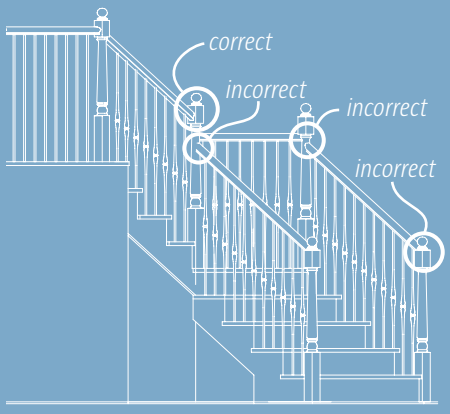
Common Staircase Issues

Title introw

Newel Heights Do Not Match

Staircases in Chief Architect behave in such a way that there is very limited adjustment that can be made to their newels. First newels—that is, newels at the first tread of each stair section—are treated differently than newels on landings. However, they both receive their height information from the same ***Newel Height*** field in the dialog box.

The Issue: If you enter a value in the ***Newel Height*** field that properly sizes first newels to meet the handrail, this value will be too high for landing newels. Even when using a default square newel, you may notice that no matter what value you enter in the ***Newel Height*** field, first newels and landing newels do not meet the handrail properly, or simply do not match in height. When using turned or shaped newels—for example, ball-top newels—these limitations become magnified.

Chief Architect Default Square Newel 44”	Arcways® Ball-Top Newel 1640P 46”
	
The newel height is correct for first newels, but it makes the landing newels too tall.	in addition to the heights not matching, the handrails do not meet the newel properly.

Quick Fix: For the heights of first newels and landing newels to match, you will need to disable all staircase newels, and manually add new newels back to your staircase, stretching them to the heights and positions that will work best for your project.

Follow these steps to disable staircase newels:

1. *In the **Interior Staircase Specification** dialog box, set the value in the **Newel Width** field to 0”*
2. *Ensure that the **Newels at First Tread** check box remains checked*
3. *Click the **OK** button*

Note: The ***Newels at First Tread*** check box must remain checked because the staircase will omit the baluster closest to where the newel would be, on the first tread of each staircase section. This allows you to place first newels manually, without interference.

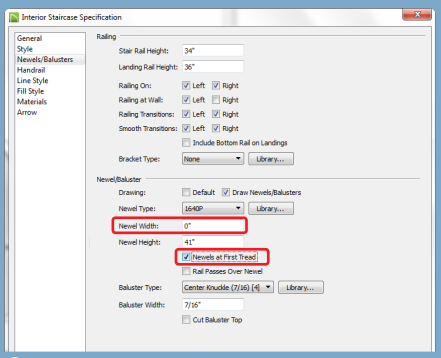


fig. 1-7 *Disabling the first newel option in the **Interior Staircase Specification** dialog box.*

Follow these steps to manually add newels back to your staircase after newels have been disabled:

1. *Choose a newel from the library, and place it into your plan*
2. *Using a combination of **Plan View** and **Elevation Views**, position your newel manually on your staircase and landings*
3. *Vertically stretch the newel so that a square portion of the newel meets both handrails properly*

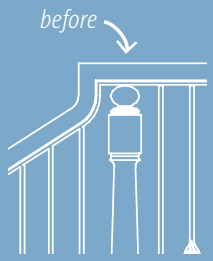
Note: You may have to "bury" part of the newel in the floor or landing in order to vertically stretch the newel enough that its top part is sized properly. This is essentially like cutting a newel to size in the field. The "buried" invisible part of the newel would be the portion cut off.

Advanced User Tip: To ensure that the proper portion of your newel symbol resizes when you stretch it, you may need to set a custom stretch plane. The wrought iron newels included in this library already have stretch planes set. For more information on using stretch planes, see "Using Stretch Planes to Vertically Stretch Specific Parts of a Newel Symbol" on page 11.

Smooth Handrail Transitions

Sometimes known as a gooseneck, smooth handrail transitions between stair sections can add a beautiful and photo-realistic touch to your project. The smooth transitions will only work on staircases with the ***Rail Passes Over Newel*** check box checked. If you do not wish to have a newel, simply set the ***Newel Width*** value to 0".

The Issue: Smooth handrail transitions can only be used with pin-top newels—that is, newels that do not extend above the handrail. If you try to enable smooth handrail transitions with a newel that is designed to extend above the handrail, e.g., a ball-top newel, you will get unexpected results, as shown at the right. If your project requires smooth handrail transitions with these types of newels, you will have to take a few extra steps.



Quick Fix: To use non-pin-top newels with smooth handrail transitions, you will need to make the newels disappear, and trick the staircase into leaving the ***Rail Passes Over Newel*** check box checked. Then you can add your own newels manually.

Follow these steps to enable smooth handrail transitions with non-pin-top newels:

1. *In the **Interior Staircase Specification** dialog box, make sure the all of the following check boxes are checked:*
   - *Railing Transitions (left and/or right)*
   - *Smooth Transitions (left and/or right)*
   - *Rail Passes Over Newel*
2. *Enter 0" in the **Newel Width** field*
3. *Click the **OK** button*
4. *Choose a non-pin-top newel from the library, and place it into your plan*
5. *Using a combination of **Plan View** and **Elevation Views**, position your newel manually on your staircase and landings*

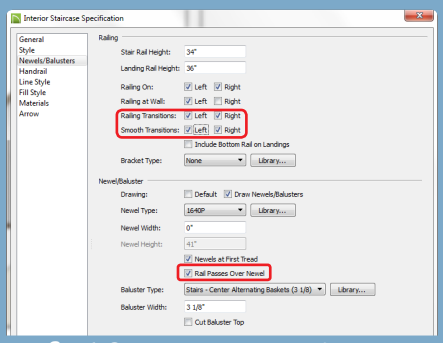
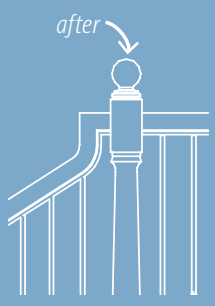


***fig. 1-8 Interior Staircase Specification** dialog*



Advanced User Tip: You may wish to ensure that stretch planes are set on the square parts of your newel symbol; this will prevent distortion when adjusting newel height. The wrought included in this library already have stretch planes set. For more information on using stretch planes, see "Using Stretch Planes to Vertically Stretch Specific Parts of a Newel Symbol" on page 11.

Symbol Usage on Curved Staircases

Due to wildly differing attributes, almost none of the previously-mentioned symbol usage rules apply to curved staircases.

Rather than leave them out of the fold completely, this section will address the unique characteristics to consider when using the wrought iron baluster symbols included in this library on curved staircases.

Curved Staircases: All Bets Are Off!

For all staircases, Chief Architect automatically calculates the number of balusters and spacing per tread based on the values entered in the ***Tread Depth*** and baluster ***Width*** fields in the ***Staircase Specification*** dialog box.

However, because the tread depths on a curved staircase can differ greatly from those on straight staircases, this automatic calculation causes baluster symbols to be counted and spaced very differently than their straight counterparts.

Furthermore, by their very nature, curved staircases have treads whose depths differ from one side to the other. This also causes the automatic baluster count and spacing calculation to differ, even on the same staircase.

Almost none of the symbol usage rules—including suggested symbol widths—apply to curved staircases. Because of this, curved staircases have their own set of characteristics to consider when using the wrought iron baluster symbols included in this library.

You Cannot Use Large or Multiple-Baluster Symbols on Both Sides of a Curved Staircase

Because the depth of a tread differs from one side to the other, the automatic baluster calculation causes some symbols to be counted and spaced differently than the symbol was designed to accommodate. This means that large symbols—like those with multiple balusters and even single scrolls—can never be spaced properly on both sidse of a curved staircase at the same time.

Chief Architect does not distinguish between the left and right handrails of a staircase, and therefor does not offer the option of choosing a different baluster symbol for each side, nor can you choose a different ***Width*** value for each side.

The Issue: Aternating and staggered patterns may work perfectly for one side of a curved staircase but not the other.

Quick Fix: Although you cannot use multiple-baluster symbols on ***both*** sides of your curved staircase, you can choose a single-baluster symbol as shown in ***Fig. 2-9*** if your project requires a handrail on both sides of your curved staircase. There are many single-baluster symbols to choose from.

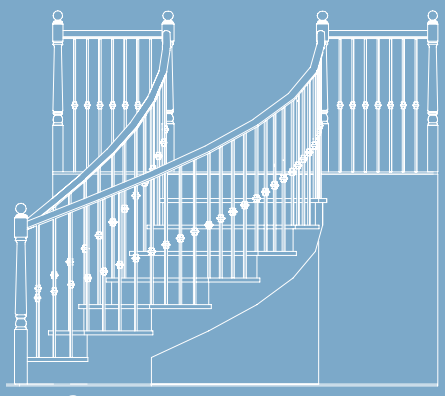


fig. 1-9 *Using single-baluster symbols yields predictable results when used on a curved staircase that has a handrail on both sides.*

Spacing Multiple-Baluster Symbols on One Side of a Curved Staircase

The automatic baluster calculation is different for each side of a curved staircase.

Some multiple-baluster symbols will work with at least one side of a curved staircase. These are appropriate when one side of a curved staircase is against a curved wall. These applications, however, may require slight adjustments to baluster spacing.

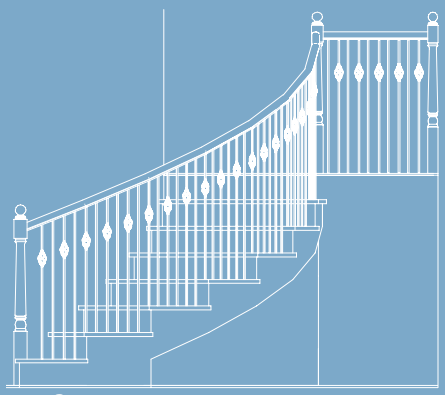


fig. 1-10 *Using an alternating pattern symbol on only one side of a curved staircase can produce predictable results with simple spacing adjustments.*

The Issue: A curved staircase with only one handrail may still require adjustment for multiple-baluster symbols to be spaced correctly.

Quick Fix: To get the proper spacing of multiple-baluster symbols on one side of a curved staircase, you may need to adjust the ***Width*** value slightly above or below its suggested width. You may also need to manually add a baluster if a first newel is used. See "Using Stretch Planes to Vertically Stretch Specific Parts of a Newel Symbol" on page 11..

Follow these steps to change the width of multiple-baluster symbols on a curved staircase:

1. *In the **Interior Staircase Specification** dialog box, open the **Newels/Balusters** panel.*
2. *Enter a new width in the **Baluster Width** field.*
3. *Click the **OK** button*

Experiment: In order to determine the exact value, you may test several widths. Be sure to increment very slightly to start with.

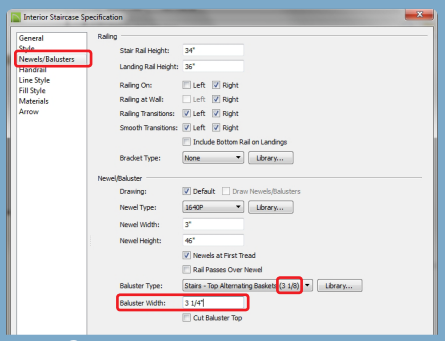
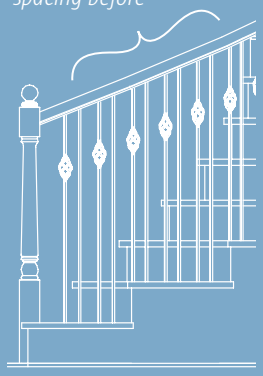


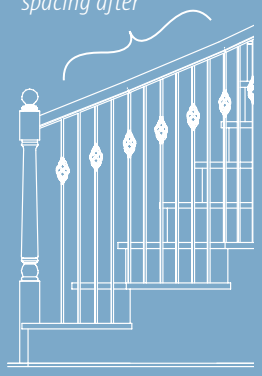
fig. 1-11 *For proper spacing, the value in the **Baluster Width** field (3 1/4") must be slightly larger than the suggested width of 3 1/8.*

Reminder: The multiple-baluster symbols in this library have stretch planes ***between*** the balusters. This means balusters do not grow, but move apart when the symbol width is increased.

spacing before

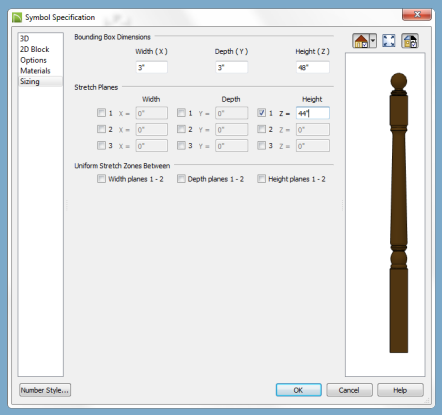


spacing after



Using Stretch Planes

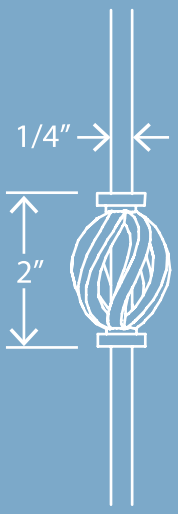
Follow these steps to vertically stretch a specific section of a newel:



1. *Choose a newel from the library*
2. *Right-click on the newel*
3. *From the context menu, select **Open Symbol** by clicking on it*
4. *In the **Sizing** panel of the **Symbol Specification** dialog box, check the **1 = Z** box*
5. *Determine roughly the location of the newel's square portion that will need to touch both handrails. In our example, its roughly four inches from the top.*
6. *Enter the value determined in step 5, into the **Height (Z)** field directly above the **1 = Z** check box. In our example, this value will be 44, since 48 - 4 = 44.*

Symbol Component Specifications

Basket Type 1



	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	Page ##
single baluster	center basket	1	¼"	3½"	staircase and balustrade	☐ ☑	✔	✔		1696
single baluster	top basket	1	¼"	3½"	staircase and balustrade	☐ ☑	✔	✔		1696
single baluster	top/bottom baskets	1	¼"	3½"	staircase and balustrade	☐ ☑	✔	✔		3380
alternating pattern	center basket and plain	2	3½"	6"	staircase and balustrade	☐ ☑	✖	✖	± ½"	1708
alternating pattern	top basket and plain	2	3½"	6"	staircase and balustrade	☐ ☑	✖	✖	± ⅛"	1708
alternating pattern	top/bottom baskets and plain	2	3½"	6"	staircase and balustrade	☐ ☑	✖	✖	± ⅛"	3392
alternating pattern	top/bottom, plain, and center baskets	4	9"	12"	balustrade only	✖ ✖	✖	✖		5100

Basket Type 2

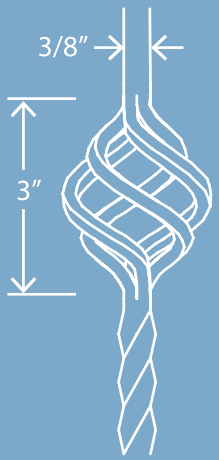
	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	Page ##
single baluster	center basket	1	⅜"	3½"	staircase and balustrade	☐ ☑	✔	✔		1517
single baluster	top basket	1	⅜"	3½"	staircase and balustrade	☐ ☑	✔	✔		1517
single baluster	top/bottom baskets	1	⅜"	3½"	staircase and balustrade	☐ ☑	✔	✔		3030
single baluster	plain (no basket)	1	⅜"	3½"	staircase and balustrade	☐ ☑	✔	✔		8
alternating pattern	center basket and plain	2	4"	8"	balustrade only	✖ ✖	✖	✖		1525
alternating pattern	top basket and plain	2	4"	8"	balustrade only	✖ ✖	✖	✖		1525
alternating pattern	top/bottom baskets with plain	2	4"	8"	balustrade only	✖ ✖	✖	✖		3038
alternating pattern	top/bottom, plain, and center baskets	4	9½"	12"	balustrade only	✖ ✖	✖	✖		4563
staggered	top offset baskets	2	5¾"	9"	balustrade only	✖ ✖	✖	✖		3038
staggered	top/bottom and center baskets	2	5¾"	9"	balustrade only	✖ ✖	✖	✖		4547

✔ *this is a feature of this symbol* ○ *limited implementation, see page number at column top* ✖ *not a feature / not applicable / not recommended*

Basket Type 3

	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	Page ##
single baluster	center basket	1	3/8"	3½"	staircase and balustrade	☐ ☑	✔	✔		1136
	top basket	1	3/8"	3½"	staircase and balustrade	☐ ☑	✔	✔		1136
	top/bottom baskets	1	3/8"	3½"	staircase and balustrade	☐ ☑	✔	✔		2268
	plain (no basket)	1	3/8"	3½"	staircase and balustrade	☐ ☑	✔	✔		12
alternating pattern		balustrade / staircase	balustrade / staircase							
	center basket and plain	2 / 2	4" / 3⅛"	6"	staircase and balustrade	☐ ☑	✖	✖		1148
	top basket and plain	2 / 2	4" / 3⅛"	6"	staircase and balustrade	☐ ☑	✖	✖		1148
	top/bottom baskets and plain	2 / 2	4" / 3⅛"	6"	staircase and balustrade	☐ ☑	✖	✖		2280
	top/bottom, plain, and center baskets	4 / ✖	9½" / ✖	12"	staircase and balustrade	✖ ✖	✖	✖		3428
staggered		balustrade / staircase	balustrade / staircase							
	offset top baskets	2 / ✖	5" / ✖	6"	balustrade only	✖ ✖	✖	✖		2247
	top and bottom baskets	2 / 2	5" / 3⅛"	6"	balustrade only	☐ ☑ ✖	✖	✖		2247
	top, center, and bottom baskets	3 / ✖	9½" / ✖	12"	balustrade only	✖ ✖	✖	✖		3410
	top/bottom and center baskets	2 / 2	5" / 3⅛"	6"	balustrade only	☐ ☑ ✖	✖	✖		3404

Basket Type 4

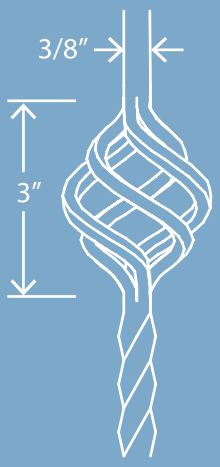


	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	
single baluster	double baskets with twist	1	3/8"	4"	staircase and balustrade	☐ ☑	✔	✔		2856
	single basket with twist	1	3/8"	4"	staircase and balustrade	☐ ☑	✔	✔		1844
	twist only (no basket)	1	3/8"	3½"	staircase and balustrade	☐ ☑	✔	✔		576
	plain (no basket)	1	3/8"	3½"	staircase and balustrade	☐ ☑	✔	✔		376

continued on the next page...

✔ *this is a feature of this symbol* ○ *limited implementation, see page number at column top* ✖ *not a feature / not applicable / not recommended*

Basket Type 4, *continued...*



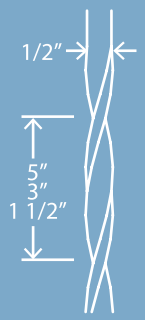
	Baluster Component Position	Balusters Per Symbol		Suggested Symbol Width		Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
								Page ##	Page ##	Page ##	Page ##	
alternating pattern	double baskets and twist	balustrade 2	staircase 3	balustrade 4"	staircase 8"	7½"	staircase and balustrade	☐ ☑	✖	✖		3432
	double baskets and plain	2	3	4"	8"	7½"	staircase and balustrade	☐ ☑	✖	✖		3232
	single basket and twist	2	3	4"	8"	7½"	staircase and balustrade	☐ ☑	✖	✖		2420
	double baskets and plain	2	3	4"	8"	7½"	staircase and balustrade	☐ ☑	✖	✖		2220
staggered	offset double baskets	2		4"		8"	balustrade only	✖ ✖	✖	✖		5712
	double and single baskets	2		4"		8"	balustrade only	✖ ✖	✖	✖		4700

Twist Type 1

	Baluster Component Position	Balusters Per Symbol		Suggested Symbol Width		Suggested Symbol Spacing	Symbol Usage*	"Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
								Page ##	Page ##	Page ##	Page ##	
single baluster	center twist	1		⅝"		4"	staircase and balustrade	☐ ☑	✔	✔		114
	top twist	1		⅝"		4"	staircase and balustrade	☐ ☑	✔	✔		114
	top/bottom twists	1		⅝"		4"	staircase and balustrade	☐ ☑	✔	✔		218
	full twist	1		⅝"		4"	staircase and balustrade	☐ ☑	✔	✔		306
	plain (no twist)	1		⅝"		4"	staircase and balustrade	☐ ☑	✔	✔		8
alternating pattern	center twist and plain	balustrade 2	staircase 3	balustrade 4½"	staircase 8"	8"	staircase and balustrade	☐ ☑	✖	✖		112
	top twist and plain	2	3	4½"	8"	8"	staircase and balustrade	☐ ☑	✖	✖		112
	top/bottom twist and plain	2	3	4½"	8"	8"	staircase and balustrade	☐ ☑	✖	✖		226
	full twist and plain	2	3	4½"	8"	8"	staircase and balustrade	☐ ☑	✖	✖		314
	top/bottom, plain, and center twists	4	✖	10¾"	✖	16"	balustrade only	✖ ✖	✖	✖		348
stagger	top/bottom and center twists	2		4½"		8"	balustrade only	✖ ✖	✖	✖		332

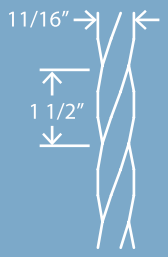
✔ *this is a feature of this symbol* ○ *limited implementation, see page number at column top* ✖ *not a feature / not applicable / not recommended*

Twisted Type 2



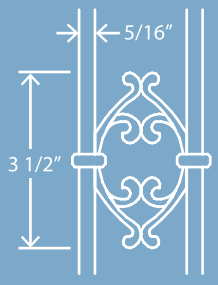
	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	
single baluster	loose twist (5″)	1	5/8"	4"	staircase and balustrade	☐ ☑	✔	✔		114
	medium twist (3″)	1	5/8"	4"	staircase and balustrade	☐ ☑	✔	✔		114
	tight twist (1½″)	1	5/8"	4"	staircase and balustrade	☐ ☑	✔	✔		218

Twisted Type 3



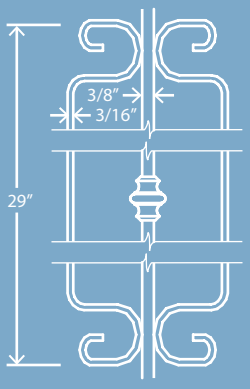
	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	
single baluster	full twist	1	5/8"	4"	staircase and balustrade	☐ ☑	✔	✔		114

Scroll Type 1



	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	
balustrade	scroll for balustrade	1	3½"	5½"	balustrade only	✖ ✖	✖	✖		2072
stairs	scroll for staircase	2	6"	✖	staircase only	☐ ☑	○	✖		4112

Scroll Type 2



	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	
single baluster	scroll baluster	1	5"	8"	balustrade only	✖ ✖	✖	✖		1134
	plain with knuckle (no scroll)	1	3/8"	4"	staircase and balustrade	☐ ☑	✔	✔		502
alternating	scroll and knuckle (level knuckles)	2 (balustrade) 2 (staircase)	8" (balustrade) 6" (staircase)	11"	staircase and balustrade	☐ ☑	○	✖		1636
	scroll and knuckle (offset knuckles)	2	8"	11"	balustrade only	✖ ✖	✖	✖		1636

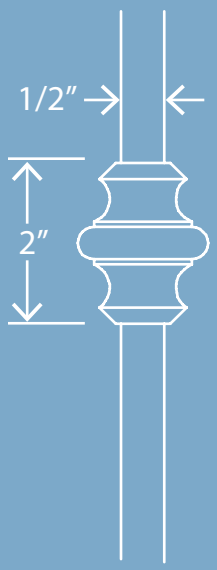
✔ this is a feature of this symbol ○ limited implementation, see page number at column top ✖ not a feature / not applicable / not recommended

Scroll Type 3

	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	
single baluster	regular scroll	1	½" / 3"	6"	staircase and balustrade	☐ ☑	✓	○		597
	loose scroll	1	½" / 3"	6"	staircase and balustrade	☐ ☑	✓	○		606
	inverted scroll	1	½" / 3"	6"	staircase and balustrade	☐ ☑	✓	○		656
	plain (no scroll)	1	½" / ½"	4"	staircase and balustrade	☐ ☑	✓	✓		8
alternating pattern	regular scroll and 1 plain	2 / ✗	4¼" / ✗	8"	balustrade only	✗ ✗	✗	✗		605
	regular scroll and 2 plain	3 / 3	8½" / 5½"	12"	staircase and balustrade	☐ ☑	○	✗		611
	inverted scroll and 1 plain	2 / ✗	4¼" / ✗	8"	balustrade only	✗ ✗	✗	✗		664
	inverted scroll and 2 plain	3 / 3	8½" / 5½"	12"	staircase and balustrade	☐ ☑	○	✗		672
	loose scroll and 1 plain	2 / ✗	4¼" / ✗	8"	balustrade only	✗ ✗	✗	✗		614
	loose scroll and 2 plain	3 / 3	8½" / 5½"	12"	staircase and balustrade	☐ ☑	○	✗		672
	loose and regular scrolls with plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1217
	loose and inverted scrolls with plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1278
	offset regular scrolls and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1228
	offset regular scrolls (1 reversed) and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1228
	offset loose scrolls and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1340
	offset loose scrolls (1 reversed) and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1340
staggered pattern	regular scrolls offset	2	5½"	11"	balustrade only	✗ ✗	✗	✗		1324
	inverted scrolls offset	2	5"	10"	balustrade only	✗ ✗	✗	✗		1312
	loose scrolls offset	2	5½"	11"	balustrade only	✗ ✗	✗	✗		1212
	loose and inverted scrolls	2	5½"	11"	balustrade only	✗ ✗	✗	✗		1262
	loose and regular scrolls	2	5½"	11"	balustrade only	✗ ✗	✗	✗		1268

✓ this is a feature of this symbol ○ limited implementation, see page number at column top ✗ not a feature / not applicable / not recommended

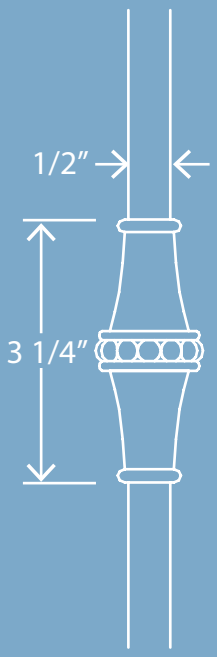
Knuckle Type 1



	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	
single baluster	center knuckle	1	½"	4"	staircase and balustrade	☐ ☑	✓	✓		344
	center double knuckles	1	½"	4"	staircase and balustrade	☐ ☑	✓	✓		680
	top/bottom knuckles	1	½"	4"	staircase and balustrade	☐ ☑	✓	✓		680
	triple knuckles	1	½"	4"	staircase and balustrade	☐ ☑	✓	✓		1016
	plain (no knuckle)	1	½"	4"	staircase and balustrade	☐ ☑	✓	✓		8
alternating pattern	center knuckle and plain	2 (balustrade) / 3 (staircase)	4¼" (balustrade) / 5½" (staircase)	8"	staircase and balustrade	☐ ☑	O	✗		352
	center double knuckles and plain	3	4¼" / 5½"	8"	staircase and balustrade	☐ ☑	O	✗		688
	top/bottom knuckles and plain	2	4¼" / 5½"	8"	staircase and balustrade	☐ ☑	O	✗		688
	triple knuckles and plain	3	4¼" / 5½"	8"	staircase and balustrade	☐ ☑	O	✗		1024
	center knuckle offset and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		704
	center, center double knuckles and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1040
	center, top/bottom knuckles and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1040
	triple, center double knuckles and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1712
	triple, center knuckles and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1376
	triple, top/bottom knuckles and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1712
staggered pattern	center and center double	2 (balustrade) / 3 (staircase)	4¼" (balustrade) / 5½" (staircase)	8"	staircase and balustrade	☐ ☑	O	✗		1024
	center and top/bottom	2	4¼" / 5½"	8"	staircase and balustrade	☐ ☑	O	✗		1024
	center double and top/bottom knuckles	2	4¼"	8"	balustrade only	✗ ✗	✗	✗		1360
	center offset	2	4¼"	8"	balustrade only	✗ ✗	✗	✗		688
	triple and center	2	4¼"	8"	balustrade only	✗ ✗	✗	✗		1360
	triple and center double	2	4¼"	8"	balustrade only	✗ ✗	✗	✗		1696

✓ *this is a feature of this symbol* O *limited implementation, see page number at column top* ✗ *not a feature / not applicable / not recommended*

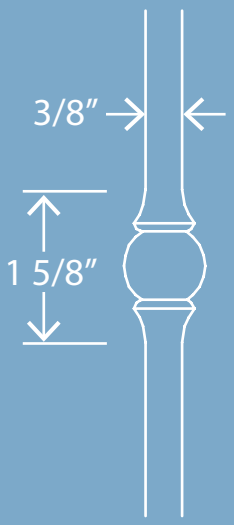
Knuckle Type 2



	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	
single baluster	center knuckle	1	½"	4"	staircase and balustrade	☐ ☑	✓	✓		344
	center double knuckles	1	½"	4"	staircase and balustrade	☐ ☑	✓	✓		680
	top/bottom knuckles	1	½"	4"	staircase and balustrade	☐ ☑	✓	✓		680
	triple knuckles	1	½"	4"	staircase and balustrade	☐ ☑	✓	✓		1016
	plain (no knuckle)	1	½"	4"	staircase and balustrade	☐ ☑	✓	✓		8
alternating pattern	center knuckle and plain	2 (balustrade) / 3 (staircase)	4¼" (balustrade) / 5½" (staircase)	8"	staircase and balustrade	☐ ☑	○	✗		352
	center double knuckles and plain	3	4¼" / 5½"	8"	staircase and balustrade	☐ ☑	○	✗		688
	top/bottom knuckles and plain	2	4¼" / 5½"	8"	staircase and balustrade	☐ ☑	○	✗		688
	triple knuckles and plain	3	4¼" / 5½"	8"	staircase and balustrade	☐ ☑	○	✗		1024
	center knuckle offset and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		704
	center, center double knuckles and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1040
	center, top/bottom knuckles and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1040
	triple, center double knuckles and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1712
	triple, center knuckles and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1376
	triple, top/bottom knuckles and plain	4	12"	18"	balustrade only	✗ ✗	✗	✗		1712
staggered pattern	center and center double	2 (balustrade) / 3 (staircase)	4¼" (balustrade) / 5½" (staircase)	8"	staircase and balustrade	☐ ☑	○	✗		1024
	center and top/bottom	2	4¼" / 5½"	8"	staircase and balustrade	☐ ☑	○	✗		1024
	center double and top/bottom knuckles	2	4¼"	8"	balustrade only	✗ ✗	✗	✗		1360
	center offset	2	4¼"	8"	balustrade only	✗ ✗	✗	✗		688
	triple and center	2	4¼"	8"	balustrade only	✗ ✗	✗	✗		1360
	triple and center double	2	4¼"	8"	balustrade only	✗ ✗	✗	✗		1696

✓ *this is a feature of this symbol* ○ *limited implementation, see page number at column top* ✗ *not a feature / not applicable / not recommended*

Knuckle Type 3



	Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	
single baluster	center knuckle	1	3/8"	3½"	staircase and balustrade	☐ ☑	✔	✔		500
	center double knuckles	1	3/8"	3½"	staircase and balustrade	☐ ☑	✔	✔		992
	top/bottom knuckles	1	3/8"	3½"	staircase and balustrade	☐ ☑	✔	✔		992
	triple knuckles	1	3/8"	3½"	staircase and balustrade	☐ ☑	✔	✔		1484
	plain (no knuckle)	1	3/8"	3½"	staircase and balustrade	☐ ☑	✔	✔		8
alternating pattern	center knuckle and plain	2	balustrade 4" staircase 3"	8"	staircase and balustrade	☐ ☑	O	✖		508
	center double knuckles and plain	2	4" 3"	8"	staircase and balustrade	☐ ☑	O	✖		1000
	top/bottom knuckles and plain	2	4" 3"	8"	staircase and balustrade	☐ ☑	O	✖		1000
	triple knuckles and plain	2	4" 3"	8"	staircase and balustrade	☐ ☑	O	✖		1492
	center knuckle offset and plain	4	11½" ✖	16"	balustrade only	✖ ✖	✖	✖		1016
	center, center double knuckles and plain	4	11½" ✖	16"	balustrade only	✖ ✖	✖	✖		1508
	center, top/bottom knuckles and plain	4	11½" 6"	16"	staircase and balustrade	☐ ☑	O	✖		1508
	triple, center double knuckles and plain	4	11½" ✖	16"	balustrade only	✖ ✖	✖	✖		2492
	triple, center knuckles and plain	4	11½" 6"	16"	staircase and balustrade	☐ ☑	O	✖		2000
staggered pattern	center and center double knuckles	2	4"	8"	balustrade only	✖ ✖	✖	✖		1492
	center offset knuckles	2	4"	8"	balustrade only	✖ ✖	✖	✖		1000
	top, center, bottom knuckles	3	8"	12"	balustrade only	✖ ✖	✖	✖		1500
	top/bottom, double and center knuckles	4	11½"	16"	balustrade only	✖ ✖	✖	✖		3476
	triple, double and center knuckles	4	11½"	16"	balustrade only	✖ ✖	✖	✖		3986
	triple and center double	2	4"	8"	balustrade only	✖ ✖	✖	✖		2476

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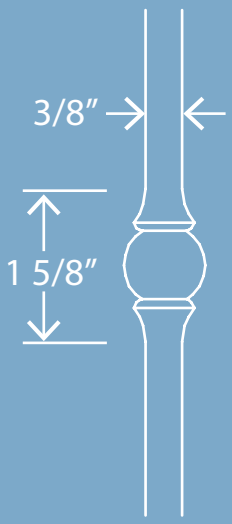
✔ *this is a feature of this symbol* O *limited implementation, see page number at column top* ✖ *not a feature / not applicable / not recommended*

Knuckle Type 3, *continued...*



Baluster Component Position	Balusters Per Symbol	Suggested Symbol Width (balustrade)	Suggested Symbol Width (staircase)	Suggested Symbol Spacing	Symbol Usage*	'Cut Baluster Top' Check Box	First-Newel Friendly	Works on Landings	1/2" Δ from 11" Tread	Symbol Polygon Count
						Page ##	Page ##	Page ##	Page ##	
top and bottom knuckles	2	4"	3⅛"	8"	staircase and balustrade	☐ ☑	O	✖		1000
top/bottom and center knuckles	2	4"	3⅛"	8"	staircase and balustrade	☐ ☑	O	✖		1492
top/bottom offset knuckles	2	4"	3⅛"	8"	staircase and balustrade	☐ ☑	O	✖		1984

✔ *this is a feature of this symbol* O *limited implementation, see page number at column top* ✖ *not a feature / not applicable / not recommended*

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