



DOUBLE-HUNG

SPECIAL SIZE FRAME DIMENSIONS

Miscellaneous Formulas



| 1-WIDE VENT UNIT | 2-WIDE VENT UNIT COMPOSITE | 3-WIDE VENT UNIT COMPOSITE |
|---|---|---|
| | | |
| MINIMUM 14-1/2" W x 23-1/2" H (368 x 597) 28-1/2" H (724) Cottage and Contemporary | MINIMUM 29-1/2" W x 23-1/2" H (749 x 597) 28-1/2" H (724) Cottage and Contemporary | MINIMUM 44-1/2" W x 23-1/2" H (1 130 x 597) 28-1/2" H (724) Cottage and Contemporary |
| EQUAL SASH MAXIMUM 48 Ft ² (4.46m ²) | EQUAL SASH MAXIMUM 48 Ft ² (4.46m ²) | EQUAL SASH MAXIMUM 48 Ft ² (4.46m ²) |
| 53-1/2" W x 78" H (1 359 x 1 981) | 95-1/2" W x 78" H (2 426 x 1 981) | 107-1/2" W x 78" H (2 731 x 1 981) |
| COTTAGE SASH MAXIMUM 53-1/2" W x 65-1/2" H (1 359 x 1 664) | COTTAGE SASH MAXIMUM 95-1/2" W x 65-1/2" H (2 426 x 1 664) | COTTAGE SASH MAXIMUM 107-1/2" W x 65-1/2" H (2 731 x 1 664) |
| CONTEMPORARY SASH MAXIMUM 53-1/2" W x 65-1/2" H (1 359 x 1 664) | CONTEMPORARY SASH MAXIMUM 95-1/2" W x 65-1/2" H (2 426 x 1 664) | CONTEMPORARY SASH MAXIMUM 107-1/2" W x 65-1/2" H (2 731 x 1 664) |

General Notes:

- Rough Opening—Frame Dimension + 1/2"
- Keep frame dimensions to the nearest 1/8" increment
- 2-Wide and 3-Wide units are composites with multiple windows in one frame with integral mullions

Miscellaneous Formulas

| | | Standard Performance | Actual Glass Height | | Standard Performance | Performance Upgrade | Visible Glass Height |
|--------|--------------|----------------------|---------------------|---------------|----------------------|---------------------|----------------------|
| | | Actual Glass Width | Lower Glass | Upper Glass | Visible Glass Width | Visible Glass Width | |
| 1-WIDE | Vent-equal | | (FH - 6) / 2 | (FH - 6) / 2 | | | |
| | Cottage | FW - 5-1/4" | (FH - 6) X .6 | (FH - 6) X .4 | AGW - 1-1/8" | FW - 3-15/16" | AGH - 1-1/8" |
| | Contemporary | | (FH - 6) X .4 | (FH - 6) X .6 | | | |
| 2-WIDE | Vent-equal | | (FH - 6) / 2 | (FH - 6) / 2 | | | |
| | Cottage | (FW / 2) - 5-1/2" | (FH - 6) X .6 | (FH - 6) X .4 | AGW - 1-1/8" | | AGW - 1-1/8" |
| | Contemporary | | (FH - 6) X .4 | (FH - 6) X .6 | | | |
| 3-WIDE | Vent-equal | | (FH - 6) / 2 | (FH - 6) / 2 | | | |
| | Cottage | (FW / 3) - 5-19/32" | (FH - 6) X .6 | (FH - 6) X .4 | AGW - 1-1/8" | | AGW - 1-1/8" |
| | Contemporary | | (FH - 6) X .4 | (FH - 6) X .6 | | | |

Clear Opening Formulas

| | COW | COH Equal Vent | COH Cottage Vent | COH Contemporary Vent |
|-------------------------------------|---------------------|-------------------|---------------------|--------------------------|
| CLEAR OPENING WITH CAM LOCK | Frame Width - 5.046 | (FH / 2) - 5.411 | FH - ALGH - 8.411 | FH - AUGH - 8.518 |
| CLEAR OPENING WITH AUTO LOCK | | (FH / 2) - 5.411 | FH - ALGH - 8.411 | FH - AUGH - 8.518 |

KEY:

AGW = Actual Glass Width
 AGH = Actual Glass Height
 ALGH = Actual Lower Glass Height
 AUGH = Actual Upper Glass Height
 FW = Frame Width

FH = Frame Height
 VGW = Visible Glass Width
 VGH = Visible Glass Height
 COW = Clear opening width
 COH = Clear opening height

Clear Opening Area (ft²) = (COW x COH) / 144
 Frame Area (ft²) = (Frame Width x Frame Height) / 144



DOUBLE-HUNG

SIZE TABLES

Single Units - Equal Sash



| 1-Wide Vent | | (610) | (710) | (762) | (813) | (914) | (965) | (1 067) | (1 219) | (1 372) |
|-------------|------------|----------|------------|------------|------------|------------|------------|-----------|-----------|-----------|
| | | (597) | (699) | (749) | (800) | (902) | (953) | (1 054) | (1 207) | (1 359) |
| Opening | Frame | 2' 0" | 2' 4" | 2' 6" | 2' 8" | 3' 0" | 3' 2" | 3' 6" | 4' 0" | 4' 6" |
| (914) | 3' 0" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (965) | 3' 2" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (1 067) | 3' 6" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (1 168) | 3' 10" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (1 219) | 4' 0" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (1 321) | 4' 4" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (1 372) | 4' 6" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (1 524) | 5' 0" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (1 575) | 5' 2" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (1 676) | 5' 6" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (1 829) | 6' 0" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (1 981) | 6' 6" | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| | Frame | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| | 2'-0/3'-0 | 2-0/3-0 | 2-4/3-0 | 2-6/3-0 | 2-8/3-0 | 3-0/3-0 | 3-2/3-0 | 3-6/3-0 | 4-0/3-0 | 4-6/3-0 |
| | 2'-0/3'-2 | 2-0/3-2 | 2-4/3-2 | 2-6/3-2 | 2-8/3-2 | 3-0/3-2 | 3-2/3-2 | 3-6/3-2 | 4-0/3-2 | 4-6/3-2 |
| | 2'-0/3'-6 | 2-0/3-6 | 2-4/3-6 | 2-6/3-6 | 2-8/3-6 | 3-0/3-6 | 3-2/3-6 | 3-6/3-6 | 4-0/3-6 | 4-6/3-6 |
| | 2'-0/3'-10 | 2-0/3-10 | 2-4/3-10 | 2-6/3-10 | 2-8/3-10 | 3-0/3-10 | 3-2/3-10 | 3-6/3-10 | 4-0/3-10 | 4-6/3-10 |
| | 2'-0/4'-0 | 2-0/4-0 | 2-4/4-0 | 2-6/4-0 | 2-8/4-0 | 3-0/4-0 | 3-2/4-0 | 3-6/4-0 | 4-0/4-0 | 4-6/4-0 |
| | 2'-0/4'-4 | 2-0/4-4 | 2-4/4-4 | 2-6/4-4 | 2-8/4-4 | 3-0/4-4 | 3-2/4-4 | 3-6/4-4 | 4-0/4-4 | 4-6/4-4 |
| | 2'-0/4'-6 | 2-0/4-6 | 2-4/4-6 | 2-6/4-6 | 2-8/4-6 | 3-0/4-6 | 3-2/4-6 | 3-6/4-6 | 4-0/4-6 | 4-6/4-6 |
| | 2'-0/5'-0 | 2-0/5-0 | 2-4/5-0 | 2-6/5-0 | 2-8/5-0 | 3-0/5-0 E1 | 3-2/5-0 E1 | 3-6/5-0 E | 4-0/5-0 E | 4-6/5-0 E |
| | 2'-0/5'-2 | 2-0/5-2 | 2-4/5-2 | 2-6/5-2 | 2-8/5-2 | 3-0/5-2 E1 | 3-2/5-2 E | 3-6/5-2 E | 4-0/5-2 E | 4-6/5-2 E |
| | 2'-0/5'-6 | 2-0/5-6 | 2-4/5-6 | 2-6/5-6 | 2-8/5-6 E1 | 3-0/5-6 E | 3-2/5-6 E | 3-6/5-6 E | 4-0/5-6 E | 4-6/5-6 E |
| | 2'-0/6'-0 | 2-0/6-0 | 2-4/6-0 | 2-6/6-0 E1 | 2-8/6-0 E1 | 3-0/6-0 E | 3-2/6-0 E | 3-6/6-0 E | 4-0/6-0 E | 4-6/6-0 E |
| | 2'-0/6'-6 | 2-0/6-6 | 2-4/6-6 E1 | 2-6/6-6 E1 | 2-8/6-6 E | 3-0/6-6 E | 3-2/6-6 E | 3-6/6-6 E | 4-0/6-6 E | 4-6/6-6 E |

Egress Notes:
 Check all applicable local codes for emergency egress requirements.

- E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².
- E1 = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².

See Design Data pages in this section for clear opening dimensions.

Not to scale.



DOUBLE-HUNG

SIZE TABLES

2-Wide Composites with Integral Mullion - Equal Sash



| 2-Wide Vent | | (1 219) | (1 422) | (1 524) | (1 626) | (1 829) | (1 930) | (2 134) | (2 438) |
|-------------|--------|----------|----------|----------|----------|----------|----------|----------|----------|
| | | (1 207) | (1 410) | (1 511) | (1 613) | (1 816) | (1 918) | (2 121) | (2 426) |
| Opening | | 4' 0" | 4' 8" | 5' 0" | 5' 4" | 6' 0" | 6' 4" | 7' 0" | 8' 0" |
| | Frame | 47 1/2" | 55 1/2" | 59 1/2" | 63 1/2" | 71 1/2" | 75 1/2" | 83 1/2" | 95 1/2" |
| (914) | 3' 0" | 4-0/3-0 | 4-8/3-0 | 5-0/3-0 | 5-4/3-0 | 6-0/3-0 | 6-4/3-0 | 7-0/3-0 | 8-0/3-0 |
| (902) | 3' 2" | 4-0/3-2 | 4-8/3-2 | 5-0/3-2 | 5-4/3-2 | 6-0/3-2 | 6-4/3-2 | 7-0/3-2 | 8-0/3-2 |
| (1 067) | 3' 6" | 4-0/3-6 | 4-8/3-6 | 5-0/3-6 | 5-4/3-6 | 6-0/3-6 | 6-4/3-6 | 7-0/3-6 | 8-0/3-6 |
| (1 168) | 3' 10" | 4-0/3-10 | 4-8/3-10 | 5-0/3-10 | 5-4/3-10 | 6-0/3-10 | 6-4/3-10 | 7-0/3-10 | 8-0/3-10 |
| (1 219) | 4' 0" | 4-0/4-0 | 4-8/4-0 | 5-0/4-0 | 5-4/4-0 | 6-0/4-0 | 6-4/4-0 | 7-0/4-0 | 8-0/4-0 |
| (1 321) | 4' 4" | 4-0/4-4 | 4-8/4-4 | 5-0/4-4 | 5-4/4-4 | 6-0/4-4 | 6-4/4-4 | 7-0/4-4 | 8-0/4-4 |
| (1 372) | 4' 6" | 4-0/4-6 | 4-8/4-6 | 5-0/4-6 | 5-4/4-6 | 6-0/4-6 | 6-4/4-6 | 7-0/4-6 | 8-0/4-6 |
| (1 524) | 5' 0" | 4-0/5-0 | 4-8/5-0 | 5-0/5-0 | 5-4/5-0 | 6-0/5-0 | 6-4/5-0 | 7-0/5-0 | 8-0/5-0 |
| (1 575) | 5' 2" | 4-0/5-2 | 4-8/5-2 | 5-0/5-2 | 5-4/5-2 | 6-0/5-2 | 6-4/5-2 | 7-0/5-2 | 8-0/5-2 |
| (1 676) | 5' 6" | 4-0/5-6 | 4-8/5-6 | 5-0/5-6 | 5-4/5-6 | 6-0/5-6 | 6-4/5-6 | 7-0/5-6 | 8-0/5-6 |
| (1 829) | 6' 0" | 4-0/6-0 | 4-8/6-0 | 5-0/6-0 | 5-4/6-0 | 6-0/6-0 | 6-4/6-0 | 7-0/6-0 | 8-0/6-0 |
| (1 981) | 6' 6" | 4-0/6-6 | 4-8/6-6 | 5-0/6-6 | 5-4/6-6 | 6-0/6-6 | 6-4/6-6 | 7-0/6-6 | |

Egress Notes:

Check all applicable local codes for emergency egress requirements.

E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².

E1 = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².
See Design Data pages in this section for clear opening dimensions.

Not to scale.



DOUBLE-HUNG

SIZE TABLES

3-Wide Composites with Integral Mullion - Equal Sash



| 3-Wide Vent | | (1 829) (1 816) | (2 134) (2 121) | (2 438) (2 426) | (2 438) (2 426) | (2 743) (2 731) | |
|--------------------|---------|--------------------|--------------------|--------------------|--------------------|--------------------|----------------|
| Opening | 6' 0" | 7' 0" | 7' 6" | 8' 0" | 9' 0" | | |
| Frame | 71 1/2" | 83 1/2" | 89 1/2" | 95 1/2" | 107 1/2" | | |
| (914) (902) | 3' 0" | 35 1/2" | | | | | |
| (965) (953) | 3' 2" | 37 1/2" | | | | | |
| (1 067) (1 054) | 3' 6" | 41 1/2" | | | | | |
| (1 168) (1 156) | 3' 10" | 45 1/2" | | | | | |
| (1 219) (1 207) | 4' 0" | 47 1/2" | | | | | |
| (1 321) (1 308) | 4' 4" | 51 1/2" | | | | | |
| (1 372) (1 359) | 4' 6" | 53 1/2" | | | | | |
| (1 524) (1 511) | 5' 0" | 59 1/2" | | | | | E ₁ |
| (1 575) (1 562) | 5' 2" | 61 1/2" | | | | | E ₁ |
| (1 676) (1 664) | 5' 6" | 65 1/2" | | | | E ₁ | |
| (1 829) (1 816) | 6' 0" | 71 1/2" | | | | | E ₁ |
| (1 981) (1 969) | 6' 6" | 77 1/2" | | | | | E ₁ |

Egress Notes:
 Check all applicable local codes for emergency egress requirements.
 E = Window meets minimum clear opening of 24" height, 20" width, and 5.7 ft².
 E₁ = Window meets minimum clear opening of 24" height, 20" width, and 5.0 ft².
 See Design Data pages in this section for clear opening dimensions.

Not to scale.



DOUBLE-HUNG

SIZE TABLES

Single Units - Cottage Sash



| 1-Wide Vent | | (610) (597) | (710) (699) | (762) (749) | (813) (800) | (914) (902) | (965) (953) | (1 067) (1 054) | (1 219) (1 207) | (1 372) (1 359) |
|----------------------|--------|----------------|----------------|----------------|----------------|----------------|----------------|--------------------|--------------------|--------------------|
| Opening | | 2' 0" | 2' 4" | 2' 6" | 2' 8" | 3' 0" | 3' 2" | 3' 6" | 4' 0" | 4' 6" |
| Frame | | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" |
| (914) (902) | 3' 0" | | | | | | | | | |
| (965) (953) | 3' 2" | | | | | | | | | |
| (1 067) (1 054) | 3' 6" | | | | | | | | | |
| (1 1168) (1 1156) | 3' 10" | | | | | | | | | |
| (1 219) (1 207) | 4' 0" | | | | | | | | | |
| (1 321) (1 308) | 4' 4" | | | | | | | | | |
| (1 372) (1 359) | 4' 6" | | | | | | | | | |
| (1 524) (1 511) | 5' 0" | | | | | | | | | |
| (1 575) (1 562) | 5' 2" | | | | | | | | | |
| (1 676) (1 664) | 5' 6" | | | | | | | | | |

Not to scale.



DOUBLE-HUNG

SIZE TABLES

Single Units - Contemporary Sash



| 1-Wide Vent | | (610) (597) | (710) (699) | (762) (749) | (813) (800) | (914) (902) | (965) (953) | (1 067) (1 054) | (1 219) (1 207) | (1 372) (1 359) | |
|--------------------|--------|----------------|----------------|----------------|----------------|----------------|----------------|--------------------|--------------------|--------------------|--|
| Opening | | 2' 0" | 2' 4" | 2' 6" | 2' 8" | 3' 0" | 3' 2" | 3' 6" | 4' 0" | 4' 6" | |
| Frame | | 23 1/2" | 27 1/2" | 29 1/2" | 31 1/2" | 35 1/2" | 37 1/2" | 41 1/2" | 47 1/2" | 53 1/2" | |
| (914) (902) | 3' 0" | 35 1/2" | | | | | | | | | |
| (965) (953) | 3' 2" | 37 1/2" | | | | | | | | | |
| (1 067) (1 054) | 3' 6" | 41 1/2" | | | | | | | | | |
| (1 168) (1 156) | 3' 10" | 45 1/2" | | | | | | | | | |
| (1 219) (1 207) | 4' 0" | 47 1/2" | | | | | | | | | |
| (1 321) (1 308) | 4' 4" | 51 1/2" | | | | | | | | | |
| (1 372) (1 359) | 4' 6" | 53 1/2" | | | | | | | | | |
| (1 524) (1 511) | 5' 0" | 59 1/2" | | | | | | | | | |
| (1 575) (1 562) | 5' 2" | 61 1/2" | | | | | | | | | |
| (1 676) (1 664) | 5' 6" | 65 1/2" | | | | | | | | | |

Not to scale.