

INSTRUCTION SHEET **POWERTEC**

RAFTER FRAMING SQUARE

Model No. 80008



The long arm of the square is the “**body**”, the short arm of the square is the “**tongue**”. The side of the square with the brand name stamped on it is the “**face**”. The reverse side is the “**back**”.

Rafter Framing Rule

- The first line of figures gives the length of **common rafter** for one foot run.
- The second line of figures gives the length of **hip or valley rafters** for one foot run.
- The third line of figures gives the length of **first jack rafter** and the **difference** in the length of the **others spaced 16 inches** on centers.
- The fourth line of figures gives the length of **first jack rafters** and the **difference** in the length of the **others spaced 24 inch** centers.
- The fifth line of figures gives the **side cut** of jack rafters against hip or valley rafters.
- The sixth line of figures gives the **side cut** of hip or valley rafter against the ridge board of deck.

EXAMPLES

If a roof raises 8 inches to the foot (third pitch), under 8 on the first line is the figure 14.42, this is the length of the common rafter for one foot run; if the building is 16 feet wide, half the width of the building would be the run of the common rafter; in this case it would be 8; multiply $14.42 \times 8 = 115.36$.

The total is 115.36 inches or 9 feet 7-3/8 inches. To obtain the bottom and top cuts of the **common rafters**, use the figures 12 on the **body** and 8 on the **tongue**; The 12 side will give the bottom cut and the 8 side will give the top cut; the same figures will give the bottom and top cuts for the **jack rafters**.

On the second line under 8 is the figure 18.76. Multiply this figure by 8, this is the run of the common rafter $18.76 \times 8 = 150.08$.

The total is 150.08 inches or 12 feet 6 inches. This is the correct length of the **hip or valley rafter**. To obtain the bottom and top cuts of the **hip or valley rafter**, use the figures 17 on the **body** and rise per foot run on the **tongue**; The 17 side will give the bottom cut; figure on the tongue will give side and top cut.

The reason for giving the lengths for one foot of common and hip or valley rafters is that it will work in all cases regardless of width of buildings.

On the third line under 8 is the figure 19.23 inches; this is the length of the first **jack rafter**, also the difference in the length of the others spaced 16 inches on centers. For example, the first jack rafter being 19.23 inches, the second jack rafter would be 3 feet 2-1/2 inches; making each one 19.23 inches longer than the other.

On the fourth line under 8 is the figure 28.84 inches this is the length of the first jack rafter and the difference in the length of the others spaced at 24 inches on center.

In marking angle cuts, particularly for the fifth or sixth lines on the tables, the 12 inch mark is always used for top, bottom and side angle cuts.

The side cuts are always on the right hand or tongue side on rafters. When marking boards these can be used for convenience at any time by taking the 12 inch mark on the body and using the body references on the tongue.

On the fifth line under 8 is the figure 10. By placing the square on stock to be cut at figures 10 on body and 12 on tongue, and marking on 12 side, this gives side cut of jacks against hip or valley rafters.

On the sixth line the figures refer to the graduation marks on the outside of the body.

These figures on the square have been derived by deciding the figures to be used with 12 on the tongue for the side cuts of the various pitches by the following method:

From a plum line, the thickness of the rafter is measured and marked at the right angles. A line is then squared across the top of the rafter and the diagonal points connected. This line or side cut is obtained by marking along the tongue of the square.

NOTE:

- To obtain the lengths and cuts be careful to use the figures under whatever figure your roof raises to the foot; if your roof raises to 12 inches to the foot, or half pitch, look under 12 and so on in all cases. In cutting jack rafters, allow for half the thickness of hip or valley rafters as lengths given on square are to center lines.
- The figures on the square giving side cuts of jacks will also give the correct miter cuts for mouldings in the valley at the junction of two gables and miter cuts for gable mouldings where it intersects with level mouldings at the end of a building.
- The figure giving cuts of sheathing in the valley or hip also give cuts for mitring level plancier with gable plancier; also the miter cuts where two gable planciers intersect; also the cut for plancier on gable end.
- To locate the bottom and top cuts of hip or valley rafter, use the figures 17 on body and whatever figure your roof raises to the foot, this will give you the correct cuts in all cases.

To locate the bottom and top cuts of common rafters and jack rafters, use the figures 12 on the body and whatever figure your roof raises to the foot on the tongue; this gives the correct cuts in all cases. Always remember that the cuts come on the tongue, or last named figure; it is so arranged in all cases.

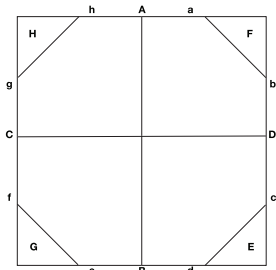
OCTAGON "EIGHT" SQUARE SCALE

This scale is along the middle of the face of the tongue and is used for laying off lines to cut on "eight square" or octagon stick of timber from a square.

Suppose the figures A, B, C, D are the butt of a square stick of timber 6x6 inches.

Through the center draw the lines A, B, C, D and parallel with the sides and at right angles to each other.

With dividers take as many spaces (6) from the scale as there are inches in the width of the stick and lay off this space on either side of the point A, as Aa and Ah; lay out in the same way the same space from point B, as Bd, Be Cf, Cg and Db, De. Then draw the lines ab, ed, ef and gh. Cut off the solid angle E, F, G and H; left is an octagon or "eight square" stick.



BRACE MEASURE

This table is along the center of the back of the tongue and gives the lengths of common braces.

Example: Find the length of a brace where the run on post and beam equals 39 inches. In the brace table find the following: 39

55.15
39

This means that with a 39 inch run on the beam and a 39 inch run on the post, the length of the brace will be 55.15 inches.

Braces may be considered as common rafters. Therefore when the brace run on the post differs from the run on the beam, their lengths as well as top and bottom cuts may be determined from the figures given in the tables of common rafters.

ESSEX BOARD MEASURE

This table is shown on the back of the square body and gives the contents in Board Measure of any size of board or timber.

Inch graduations along the outer edge are used in combination with the values shown along the seven parallel lines.

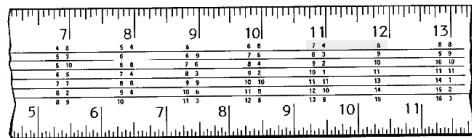
The figure 12 on the outer edge represents a "one-inch board, 12 inches wide" and is the starting point for all calculations. All of the inch graduations on both sides of the 12 represent the width. The smaller figures in the column under 12 indicates the length of the piece.

Figures in the vertical columns under the inch graduations show the board measure.

Rule: To find the contents of a piece of lumber. Under the mark 12 on the square's outer edge, find the "length" of the piece. Along the same scale of inch markings locate the "width" of the piece. Then follow the line on which the length is etched toward the column of figures under the given width. The figure shown at the point of intersection indicates the board measure of the piece.

Example: Find the board measure of a piece 8 feet long and 11 inches wide.

First locate the 8 feet in the column for the length in feet. Then find 11 inches on the top edge of the square for the width in inches. Follow the lines to where they meet and 7-4 (or seven and four twelfths) is found to be the number of feet in this board.



The figures in the tables are given for boards on inch thick. To obtain the contents for any other thickness multiply the figure given in the table by the thickness of the lumber.

SQUARE CARE

Never use emery or sandpaper on the square. For unfinished squares add a few drops of oil before storing. Finger prints and perspiration may cause the square to rust.

Visit us on the web at powertecproducts.com



You will need this manual for safety instructions, operating procedures, and warranty. Put it and the original sales invoice in a safe, dry place for future reference.

POWERTEC

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