

Conduit 45-Degree Bend Calculator

Calculate a 45-degree conduit bend layout from bend rise, circular bend radius, and added straight allowance.

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<https://www.elecatrix.com/conduit-bending/conduit-45-degree-bend-calculator/>

Inputs

Input	Value	Unit
Bend rise	4	in
Bend radius	2	in
Straight allowance	10	in

Results

Result	Value	Unit
Diagonal travel	5.6569	in
Tangent run per side	4	in
45-degree arc length	1.5708	in
Layout length	19.5708	in
Bend angle	45	deg

Calculation details

Detail	Value	Unit
Layout boundary	Layout length combines two entered tangent runs, a circular 45 degree arc, and entered straight allowance; shoe take-up and springback are not inferred.	

Formulas

$$D = \frac{R_{rise}}{\sin(45^\circ)}$$

$$T = \frac{R_{rise}}{\tan(45^\circ)}$$

$$L_{arc} = 2\pi r \times (45^\circ/360^\circ)$$

$$L_{layout} = 2T + L_{arc} + L_{straight}$$

Warnings and limitations

This is a transparent geometry worksheet. It does not select a bender shoe, take-up, springback correction, conduit product, or code-compliant installation method.