

Bundled pigtail wire diameter



Article Overview

The diameter of a bundled pigtail wire depends on the number of wires, individual wire diameters, insulation thickness, and packing efficiency.

Calculating Bundle Diameter

To estimate the total diameter of a wire bundle, you can use the following approach:

- Determine the total wire area: Sum the cross-sectional areas of all insulated wires in the bundle. For a single wire, the area is calculated as $\pi \times (d/2)^2$, where d is the wire diameter including insulation.
- Apply packing efficiency: Wires are rarely perfectly packed. Typical packing factors are:
 - Random hand-assembled bundles: 60% efficiency
 - Layered bundles: 70% efficiency
 - Hexagonal close-pack (machine-laid): 74% efficiency
- Calculate bundle diameter: Use the formula $\text{Bundle Diameter} = 2 \times \sqrt{\frac{\text{Total Wire Area} \times \text{Packing Factor}}{\pi}}$. This gives the approximate outer diameter of the bundle.
- Adjust for additional features: If the bundle has a braid shield or extra jacket, add approximately 0.025 inches plus twice the jacket thickness to the calculated diameter.

Practical Considerations

- Conduit and connector sizing: The calculated bundle diameter helps select the correct conduit, grommet, or connector backshell size. Ensure the bundle does not...

Article Content

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CABLE BUILD UP CHARTS

Concentric layers will give a slightly increased diameter in lieu of bundled or bunched, but it will produce consistent positioning of

Nov 25, 2025

Cable Bundle Diameter Calculator

Use our advanced cable bundle diameter calculator to accurately determine the total diameter of multiple cables bundled together.

May 01, 2026

What Is a Pigtail in Electrical Wiring?

Learn what an electrical pigtail is and why this short jumper wire is essential for safe, code-compliant connections in

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Wire Bundle Diameter Calculator

This calculator gives a practical outside diameter for grouped wires. It uses wire count, wire diameter, packing factor, wrap thickness,

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Master a Perfect Inline Wire Splice Everytime

Master a Perfect Inline Wire Splice Everytime: In this instructable i will teach you how to make a perfect inline wire splice, every

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Pigtail – Standard Wire & Cable Co

CONDUCTOR: Soft stranded tinned copper. CONSTRUCTION: Rope lay, close right-hand lay, extra flexible. USES: Shunt leads,

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wiring pigtails

We provide a detailed guide on wiring pigtails, covering application, advantages, and installation tips. Enhance electronics

Oct 28, 2025

Wire Bundle Diameter Calculator

Calculate the approximate diameter of a wire bundle to select the proper accessory cable entry size for circular connector backshells.

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Fiber Optic Pigtailed

OCC's fiber optic pigtail assemblies are designed for reliability and performance. All OCC pigtail assemblies may be ordered pre

Apr 15, 2026

One-Pull's Bundled Cable Outside Diameter Calculator

At One-Pull, we're always looking for ways to save our customers time. By providing a real-time answer to "what is

Jul 12, 2026

Bundle Diameter Calculator & Formula Online Calculator Ultra

The Bundle Diameter Calculator is designed to calculate the overall diameter of a bundle of cylindrical wires. It's useful

Aug 22, 2025

Wire Bundle Diameter Calculation Guide

The document discusses various topics related to electrical harness design and installation including how to calculate bundle

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Bundle Diameter Calculator

The bundle diameter calculation determines the effective diameter of a group of individual elements (wires, cables, pipes) when

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What Is a Pigtail Wire and When Do You Need One?

Pigtails are also commonly used for grounding, linking the bare circuit ground wires and the metal box to a single green insulated

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Bundle Diameter Calculator

A Bundle Diameter Calculator helps you estimate the diameter of a bundle of wires or cables. It's useful for tasks like

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Wire Harness Bundle Diameter Calculator

Use our advanced wire harness bundle diameter calculator to accurately determine the overall size of your wire bundles. Understand

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Selecting the Right Cable Tie | DigiKey

The maximum diameter specification indicates the largest diameter wire bundle that the tie accommodates. The bundle

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How To Calculate Bundle Diameter

Bundle diameter refers to the overall diameter of a group of wires or cables bundled together. It's an important measurement in

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catalog07V10 dd

The diameter of the large members is taken to be one unit of diameter. The size of the other members are shown as some decimal

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Bundle Diameter Calculator

Estimate wire or cable bundle diameter, solve for a single-wire outside diameter, or find maximum wire count with

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Wire Bundle Diameter Calculator

Use this calculator to find the approximate diameter of a wire bundle. The wire bundle diameter is used to select the proper

Jul 14, 2026

Wire Bundle Diameter Calculator for Harness Design | Wirelt

Calculate wire bundle OD for conduit, backshell, and packaging decisions before the harness reaches BOM and release documentation.

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Wire Harness Bundle Diameter Calculator

It helps calculate the overall diameter of a wire harness bundle based on the size and quantity of individual wires, the

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Bundle Diameter Calculator – Wire Bundle Diameter Calculator

Accurately calculate the diameter of cable or wire bundles with our Bundle Diameter Calculator. Perfect for wiring

Contact Us

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