

# Tube and Pipe Design

Use Autodesk Inventor Professional to accelerate the design for routed elements, including tubing, piping, and flexible hose.

Changing to different styles of fittings is quick and easy. Simply select a different pipe style and Autodesk Inventor repopulates the pipe run with the new fittings while adhering to any new design rules.

## Functional Route Design

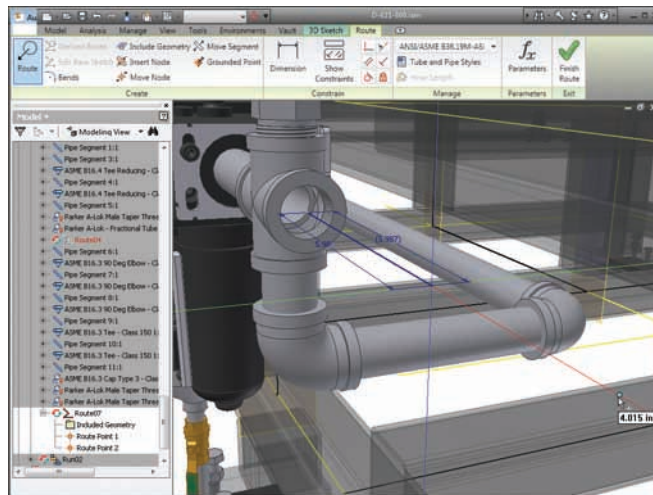
Simplify the design of pipe runs—or spools—to fit in complex assemblies or tight spaces. Automatically routed segments respect predefined routing styles to present you with alternative pipe routes that comply with routing rules, such as minimum or maximum length criteria and bend radius. You can also define pipe runs manually by creating 3D sketch geometry or build them up interactively using the route edit tools. For maximum control, combine automatically routed segments with user-defined segments.

## Pipe Fittings Library

Improve quality, easily organize parts, and eliminate tedious searching with automatic placement of the correct part from an extensive library of piping components. The library contains commonly used, industry-standard tubing, piping, hose, and fittings, including ANSI, DIN, ISO, and JIS. Add or modify properties, including part numbers, to existing parts and control file names used to instance fittings, pipes, tubes, and other content.

## Flexible Hose

Make sure flexible hose and fittings fit properly using a 3D digital prototype that drives accurate manufacturing documentation. The system inserts appropriate hose fittings from the Content Center and checks for minimum bend radius based on the hose style you select. Hose lengths are updated automatically for use in Length Roll-Up commands.



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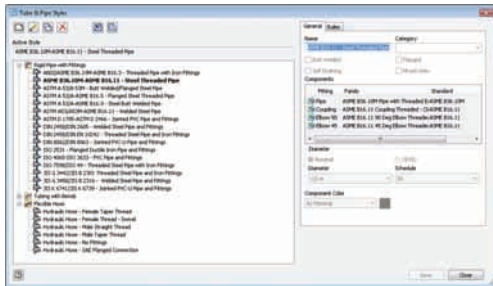
Autodesk Inventor Professional provides rules-based routing tools that select the correct fittings and helps the pipe run to comply with your standards for segment length, round-off increments, and bend radius.

## Rigid Tube Routing

Quickly create rigid tubes with superior control over the shape, bend angles, and radii. Create rigid tubes with an arbitrary number of bends and variable custom bend angles and radii. The radius and rotation handles offer greater control over the shape of rigid tubes.

## Tube and Pipe Styles

Increase the quality and manufacturability of designs by helping to ensure that tube and pipe runs automatically adhere to preset design standards. Create tube and pipe styles to support the use of threaded, welded, and flanged connections. Styles define the fittings to be used for both automatic and manual routing, and enforce design rules, including minimum segment lengths and minimum bend radii, as well as the maximum length between couplings.

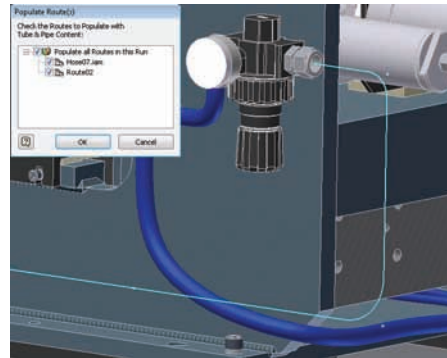


## Hygienic Pipe Runs

Design process lines that comply with sterility and hygiene standards required for process equipment in the pharmaceutical, food, and personal care industries. Incorporate the correct slope into the pipe route, including use of drainable angle fittings that comply with the American Society of Mechanical Engineers (ASME) bioprocessing equipment where needed.

## Creating Runs

Automatically populate piping routes with real parts that adhere to manufacturing standards. The Populate Route tool turns tube, pipe, and hose routes into physical pipe runs, automatically placing fittings, pipe segments, rigid tubes, and hoses as needed. Standard Inventor parts are created during this process to make it easy to perform mass property calculations and interference checks. In addition, couplings are automatically placed when pipes reach their maximum length, and users can specify length cutoff increments.



## Tube and Pipe Documentation

Create manufacturing deliverables without redrawing—reducing errors and associated costs. Fully associative documentation for tube and pipe runs provides assembly drawings that update whenever a change is made to the 3D design. ISOGEN PCF file output creates isometric piping drawings in third-party ISOGEN software such as Alias ISOGEN, and tubing bend tables in ASCII format provide the information required by tube bending machines.

