

Support Spacing For ABS and PVC Pipe

Adequate support for any piping system is a matter of great importance. In practice, support spacings are a function of pipe size, operating temperatures, the location of heavy valves or fittings, and the mechanical properties of the pipe material.

To ensure the satisfactory operation of a DWV or pressure piping system, the location and type of hangers should be carefully considered. The principles of design for metallic piping systems are generally also applicable to DWV or pressure piping systems, but with some notable areas where special consideration should be exercised. Hangers should not compress, distort, cut or abrade the piping.

All piping should be supported with an approved hanger at intervals sufficiently close to maintain correct pipe alignment and to prevent sagging or grade reversal. Pipe should also be supported at all branch ends and at all changes of direction. Support trap arms as close as possible to the trap. In keeping with good plumbing practices, support and brace all closet bends and fasten closet flanges.

- (1) Concentrated loads (ie: Valves and other appurtenances) should be supported directly so as to eliminate high stress concentrations. Should this be impractical, then the pipe must be supported immediately adjacent to the load.
- (2) In systems where large fluctuations in temperature occur, allowances must be made for expansion and contraction of the piping system. Since changes in direction in the system are usually sufficient to allow for expansion and contraction, hangers must be placed so as not to restrict this movement.
- (3) Since plastic pipe expands or contracts approximately five times more than steel, hangers should not restrict this movement. When using a clamp-type hanger, the hanger should not force the pipe and fittings into position.
- (4) Hangers should provide as much bearing surface as possible. To prevent damage to the pipe, file smooth any sharp edges or burrs on the hangers or supports.
- (5) Plastic piping systems must not be placed alongside steam or other high temperature pipe lines or other high temperature objects.
- (6) Support spacing for horizontal piping systems must be determined by the maximum operating temperature the system will encounter. The piping should be supported on uniform centers with supports that do not restrict the axial movement.
- (7) For vertical lines, it is recommended that an engineer design the vertical supports according to the vertical load involved.

- (8) Changes in direction should be supported as close as practical to the fitting to avoid introducing excessive torsional stresses into the system. Please see the associated chart showing the recommended support spacing according to size, schedule, and operating temperatures. These spacings apply to continuous spans of uninsulated lines, with no concentrated loads, conveying liquids with specific gravities of up to 1.00.

Horizontal and Vertical Support for CPVC Pipe

Most plumbing codes and building codes require support for horizontal pipe lines every 3 feet for pipe in 1/2"-1" diameters, and every 4 feet for pipe with diameters greater than 1". Support spacing should be in accordance with applicable plumbing and building codes.

Vertical CPVC piping should be properly supported and have a mid-story guide, unless thermal expansion requires another design.

The pipe should not be anchored tightly by the support, but secured in a manner to allow for movement caused by thermal expansion and contraction. It is recommended that you use clamps or straps that allow pipe to remain away from the framing, thus reducing the noise generated when pipe is allowed to rub against wood. Use hangers and clamps that are chemically compatible with CPVC.

Plastic insulators do not need to be used when CPVC pipe passes through wood studs. However, when CPVC pipe passes through metal studs, some forms of protection must be used to isolate the pipe from abrasion and to prevent noise.

NOTICE: The above information on this page provides general guidelines. It should be used only as a reference and not as a guarantee of performance. Specific installation instructions and techniques may be required as a result of local plumbing and building codes, engineering specifications and instructions.

NOTICE

Failure to compensate for expansion and contraction caused by temperature change may result in system failure and property damage.

- Do not restrict expansion or contraction. Restraining movement in piping systems is not recommended and may result in joint or fitting failure.
- Use straps or clamps that allow for piping system movement.
- Align all piping system components properly without strain. Do not bend or pull pipe into position after being solvent welded.
- Do not terminate a pipe run against a stationary object (example: wall or floor joist).
- Do not install fittings under stress.

General Guidelines for Horizontal Support Spacing (in feet)

Nom. Pipe Size (in.)	PVC PIPE															ABS PIPE				
	SDR 21 PR200 & SDR 26 PR160					Schedule 40					Schedule 80					Schedule 40				
	Operating Temp. °F					Operating Temp. °F					Operating Temp. °F					Operating Temp. °F				
	60	80	100	120	140	60	80	100	120	140	60	80	100	120	140	60	80	100	120	140
½	3½	3½	3	2		4½	4½	4	2½	2½	5	4½	4½	3	2½					
¾	4	3½	3	2		5	4½	4	2½	2½	5½	5	4½	3	2½					
1	4	4	3½	2		5½	5	4½	3	2½	6	5½	5	3½	3					
1¼	4	4	3½	2½		5½	5½	5	3	3	6	6	5½	3½	3					
1½	4½	4	4	2½		6	5½	5	3½	3	6½	6	5½	3½	3½	6	6	5½	3½	3
2	4½	4	4	3		6	5½	5	3½	3	7	6½	6	4	3½	6	6	5½	3½	3
2½	5	5	4½	3		7	6½	6	4	3½	7½	7½	6½	4½	4					
3	5½	5½	4½	3		7	7	6	4	3½	8	7½	7	4½	4	7	7	7	4	3½
4	6	5½	5	3½		7½	7	6½	4½	4	9	8½	7½	5	4½	7½	7½	7	4½	4
6	6½	6½	5½	4		8½	8	7½	5	4½	10	9½	9	6	5	8½	8½	8	5	4½
8	7	6½	6	5		9	8½	8	5	4½	11	10½	9½	6½	5½					
10						10	9	8½	5½	5	12	11	10	7	6					
12						11½	10½	9½	6½	5½	13	12	10½	7½	6½					
14						12	11	10	7	6	13½	13	11	8	7					
16						12½	11½	10½	7½	6½	14	13½	11½	8½	7½					

NOTE: Always follow local code requirements for hanger spacing. Most plumbing codes have the following hanger spacing requirements:

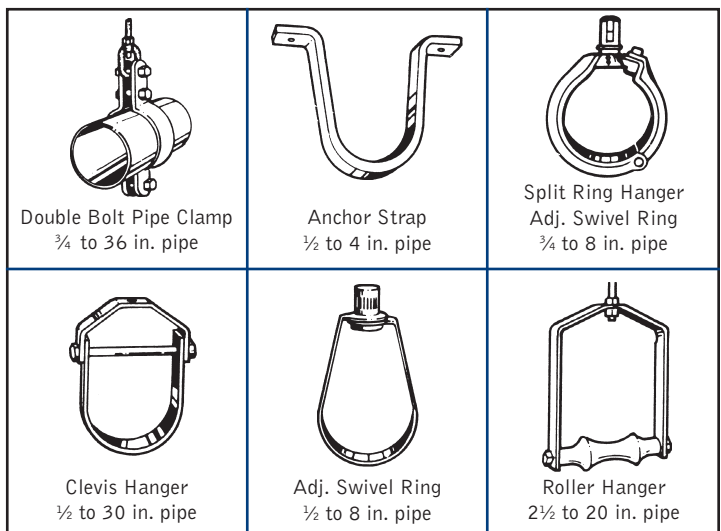
- ABS and PVC pipe have a maximum horizontal hanger spacing of every four feet for all sizes.
- CPVC pipe or tubing has a maximum horizontal hanger spacing of every three feet for one inch and under and every four feet for sizes 1¼ inch and larger.

General Guidelines for Horizontal Support Spacing (in feet)

Nom. Pipe Size (in.)	CPVC PIPE									
	Schedule 80*					SDR 11				
	Operating Temp. °F					Operating Temp. °F				
	60	80	100	120	140	180	73	100	140	180
½	5½	5½	5	4½	4½	2½	4	4	3½	3
¾	5½	5½	5½	5	4½	2½	5	4½	4	3
1	6	6	6	5½	5	3	5½	5	4½	3
1¼	6½	6½	6	6	5½	3	6	5½	5	4
1½	7	7	6½	6	5½	3½	6½	6	5½	4
2	7	7	7	6½	6	3½	7½	7	6½	4
2½	8	7½	7½	7½	6½	4				
3	8	8	8	7½	7	4				
4	9	9	9	8½	7½	4½				
6	10	10½	9½	9	8	5				
8	11	11	10½	10	9	5½				
10	11½	11½	11	10½	9½	6				
12	12½	12½	12½	11	10½	6½				

*Note: This product is not currently available. Information provided is for reference only.

Typical Pipe Hangers, Clamps, and Supports



The pipe should not be anchored tightly by the support, but secured in a manner to allow for movement caused by thermal expansion and contraction. It is recommended that you use clamps or straps that allow pipe to remain away from the framing, thus reducing the noise generated when pipe is allowed to rub against wood.