

## MAXIMUM ALLOWABLE RESTRAINT SPACING – STANDARD STEEL PIPE

Table A6.1-1; Max Allowable Restraint Spacing for Non-Insulated Standard Steel Pipe – Empty

| Seismic Coefficient $C_s$ |                 |                 |                           | 0.25                              | 0.50                              | 0.75                              | 1.00                              | 1.50                              | 2.00                              |
|---------------------------|-----------------|-----------------|---------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Seismic Hazard Level SHL  |                 |                 |                           | D                                 | C                                 | B                                 | A                                 | -----                             | -----                             |
| Pipe Size (in)            | Pipe O. D. (in) | Pipe I. D. (in) | Pipe Weight $w_p$ (lb/ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) |
| 3/4                       | 1.050           | 0.824           | 1.1                       | 40                                | 30                                | 30                                | 20                                | 20                                | 20                                |
| 1                         | 1.315           | 1.049           | 1.7                       | 40                                | 40                                | 30                                | 30                                | 30                                | 20                                |
| 1 1/4                     | 1.660           | 1.380           | 2.3                       | 40                                | 40                                | 40                                | 40                                | 30                                | 30                                |
| 1 1/2                     | 1.900           | 1.610           | 2.7                       | 40                                | 40                                | 40                                | 40                                | 30                                | 30                                |
| 2                         | 2.375           | 2.067           | 3.6                       | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 2 1/2                     | 2.875           | 2.469           | 5.8                       | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 3                         | 3.500           | 3.068           | 7.6                       | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 3 1/2                     | 4.000           | 3.548           | 9.1                       | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 4                         | 4.500           | 4.026           | 10.8                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 5                         | 5.563           | 5.047           | 14.6                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 6                         | 6.625           | 6.065           | 19.0                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 8                         | 8.625           | 7.981           | 28.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 10                        | 10.750          | 10.020          | 40.4                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 11                        | 11.750          | 11.000          | 45.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 12                        | 12.750          | 12.000          | 49.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 14                        | 14.000          | 13.250          | 54.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 16                        | 16.000          | 15.250          | 62.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 18                        | 18.000          | 17.250          | 70.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 20                        | 20.000          | 19.250          | 78.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 22                        | 22.000          | 21.250          | 86.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 24                        | 24.000          | 23.250          | 94.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |

## MAXIMUM ALLOWABLE RESTRAINT SPACING – STANDARD STEEL PIPE PAGE 1 of 4

## SECTION – A6.1

RELEASED ON: 07/30/2008



Toll Free (USA Only): 800-959-1229  
 International: 614-889-0480  
 FAX: 614-889-0540  
 World Wide Web: [www.kineticsnoise.com](http://www.kineticsnoise.com)  
 E-mail: [sales@kineticsnoise.com](mailto:sales@kineticsnoise.com)



Dublin, Ohio, USA • Mississauga, Ontario, Canada

Member

# KINETICS™ Pipe & Duct Seismic Application Manual

Table A6.1-2; Max Allowable Restraint Spacing for Non-Insulated Standard Steel Pipe Filled – Water

| Seismic Coefficient $C_s$ |                 |                 |                           | 0.25                              | 0.50                              | 0.75                              | 1.00                              | 1.50                              | 2.00                              |
|---------------------------|-----------------|-----------------|---------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Seismic Hazard Level SHL  |                 |                 |                           | D                                 | C                                 | B                                 | A                                 | ----                              | ----                              |
| Pipe Size (in)            | Pipe O. D. (in) | Pipe I. D. (in) | Pipe Weight $w_p$ (lb/ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) |
| 3/4                       | 1.050           | 0.824           | 1.4                       | 40                                | 30                                | 30                                | 20                                | 20                                | 20                                |
| 1                         | 1.315           | 1.049           | 2.1                       | 40                                | 40                                | 30                                | 30                                | 20                                | 20                                |
| 1 1/4                     | 1.660           | 1.380           | 2.9                       | 40                                | 40                                | 40                                | 30                                | 30                                | 30                                |
| 1 1/2                     | 1.900           | 1.610           | 3.6                       | 40                                | 40                                | 40                                | 40                                | 30                                | 30                                |
| 2                         | 2.375           | 2.067           | 5.1                       | 40                                | 40                                | 40                                | 40                                | 40                                | 30                                |
| 2 1/2                     | 2.875           | 2.469           | 7.9                       | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 3                         | 3.500           | 3.068           | 10.8                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 3 1/2                     | 4.000           | 3.548           | 13.4                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 4                         | 4.500           | 4.026           | 16.3                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 5                         | 5.563           | 5.047           | 23.3                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 6                         | 6.625           | 6.065           | 31.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 8                         | 8.625           | 7.981           | 50.2                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 10                        | 10.750          | 10.020          | 74.6                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 11                        | 11.750          | 11.000          | 86.7                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 12                        | 12.750          | 12.000          | 98.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 14                        | 14.000          | 13.250          | 114.3                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 16                        | 16.000          | 15.250          | 141.7                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 18                        | 18.000          | 17.250          | 171.8                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 20                        | 20.000          | 19.250          | 204.6                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 22                        | 22.000          | 21.250          | 240.2                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 24                        | 24.000          | 23.250          | 278.5                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |

## MAXIMUM ALLOWABLE RESTRAINT SPACING – STANDARD STEEL PIPE PAGE 2 of 4 SECTION – A6.1

RELEASED ON: 07/30/2008



Toll Free (USA Only): 800-959-1229  
 International: 614-889-0480  
 FAX: 614-889-0540  
 World Wide Web: [www.kineticsnoise.com](http://www.kineticsnoise.com)  
 E-mail: [sales@kineticsnoise.com](mailto:sales@kineticsnoise.com)



Member

Dublin, Ohio, USA • Mississauga, Ontario, Canada

# KINETICS™ Pipe & Duct Seismic Application Manual

Table A6.1-3; Max Allowable Restraint Spacing for Insulated Standard Steel Pipe Filled – Water

| Seismic Coefficient $C_s$ |                 |                 |                           | 0.25                              | 0.50                              | 0.75                              | 1.00                              | 1.50                              | 2.00                              |
|---------------------------|-----------------|-----------------|---------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Seismic Hazard Level SHL  |                 |                 |                           | D                                 | C                                 | B                                 | A                                 | ----                              | ----                              |
| Pipe Size (in)            | Pipe O. D. (in) | Pipe I. D. (in) | Pipe Weight $w_p$ (lb/ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) |
| 3/4                       | 1.050           | 0.824           | 2.1                       | 30                                | 30                                | 20                                | 20                                | 20                                | 15                                |
| 1                         | 1.315           | 1.049           | 2.1                       | 40                                | 40                                | 30                                | 30                                | 20                                | 20                                |
| 1 1/4                     | 1.660           | 1.380           | 2.9                       | 40                                | 40                                | 40                                | 30                                | 30                                | 30                                |
| 1 1/2                     | 1.900           | 1.610           | 3.6                       | 40                                | 40                                | 40                                | 40                                | 30                                | 30                                |
| 2                         | 2.375           | 2.067           | 5.1                       | 40                                | 40                                | 40                                | 40                                | 40                                | 30                                |
| 2 1/2                     | 2.875           | 2.469           | 7.9                       | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 3                         | 3.500           | 3.068           | 10.8                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 3 1/2                     | 4.000           | 3.548           | 13.4                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 4                         | 4.500           | 4.026           | 16.3                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 5                         | 5.563           | 5.047           | 23.3                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 6                         | 6.625           | 6.065           | 31.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 8                         | 8.625           | 7.981           | 50.2                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 10                        | 10.750          | 10.020          | 74.6                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 11                        | 11.750          | 11.000          | 86.7                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 12                        | 12.750          | 12.000          | 98.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 14                        | 14.000          | 13.250          | 114.3                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 16                        | 16.000          | 15.250          | 141.7                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 18                        | 18.000          | 17.250          | 171.8                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 20                        | 20.000          | 19.250          | 204.6                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 22                        | 22.000          | 21.250          | 240.2                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 24                        | 24.000          | 23.250          | 278.5                     | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |

## MAXIMUM ALLOWABLE RESTRAINT SPACING – STANDARD STEEL PIPE PAGE 3 of 4 SECTION – A6.1

RELEASED ON: 07/30/2008



Toll Free (USA Only): 800-959-1229  
 International: 614-889-0480  
 FAX: 614-889-0540  
 World Wide Web: [www.kineticsnoise.com](http://www.kineticsnoise.com)  
 E-mail: [sales@kineticsnoise.com](mailto:sales@kineticsnoise.com)



Member

Dublin, Ohio, USA • Mississauga, Ontario, Canada

# KINETICS™ Pipe & Duct Seismic Application Manual

Table A6.1-4; Max Allowable Restraint Spacing for Insulated Standard Steel Pipe Filled – Steam

| Seismic Coefficient $C_s$ |                 |                 |                           | 0.25                              | 0.50                              | 0.75                              | 1.00                              | 1.50                              | 2.00                              |
|---------------------------|-----------------|-----------------|---------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Seismic Hazard Level SHL  |                 |                 |                           | D                                 | C                                 | B                                 | A                                 | ----                              | ----                              |
| Pipe Size (in)            | Pipe O. D. (in) | Pipe I. D. (in) | Pipe Weight $w_p$ (lb/ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) | Actual Maximum Spacing $S_T$ (ft) |
| 3/4                       | 1.050           | 0.824           | 1.9                       | 30                                | 30                                | 20                                | 20                                | 20                                | 15                                |
| 1                         | 1.315           | 1.049           | 1.7                       | 40                                | 40                                | 30                                | 30                                | 30                                | 20                                |
| 1 1/4                     | 1.660           | 1.380           | 2.3                       | 40                                | 40                                | 40                                | 40                                | 30                                | 30                                |
| 1 1/2                     | 1.900           | 1.610           | 2.7                       | 40                                | 40                                | 40                                | 40                                | 30                                | 30                                |
| 2                         | 2.375           | 2.067           | 3.7                       | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 2 1/2                     | 2.875           | 2.469           | 5.8                       | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 3                         | 3.500           | 3.068           | 7.6                       | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 3 1/2                     | 4.000           | 3.548           | 9.1                       | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 4                         | 4.500           | 4.026           | 10.8                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 5                         | 5.563           | 5.047           | 14.6                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 6                         | 6.625           | 6.065           | 19.0                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 8                         | 8.625           | 7.981           | 28.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 10                        | 10.750          | 10.020          | 40.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 11                        | 11.750          | 11.000          | 45.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 12                        | 12.750          | 12.000          | 49.5                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 14                        | 14.000          | 13.250          | 54.6                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 16                        | 16.000          | 15.250          | 62.6                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 18                        | 18.000          | 17.250          | 70.6                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 20                        | 20.000          | 19.250          | 78.6                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 22                        | 22.000          | 21.250          | 86.6                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |
| 24                        | 24.000          | 23.250          | 94.7                      | 40                                | 40                                | 40                                | 40                                | 40                                | 40                                |

## MAXIMUM ALLOWABLE RESTRAINT SPACING – STANDARD STEEL PIPE SECTION – A6.1

PAGE 4 of 4

RELEASED ON: 07/30/2008



Toll Free (USA Only): 800-959-1229  
 International: 614-889-0480  
 FAX: 614-889-0540  
 World Wide Web: [www.kineticsnoise.com](http://www.kineticsnoise.com)  
 E-mail: [sales@kineticsnoise.com](mailto:sales@kineticsnoise.com)



Dublin, Ohio, USA • Mississauga, Ontario, Canada

Member