

$h = 0.3'' \text{ WC FOR THIS TABLE}$

Table 2. Natural Gas Pipe-Sizing Table

A. For gas pressure < 1.5 psi

| Pipe Size (in.) | Actual I.D. ^a (in.) | Total Equivalent Length of Longest Run of Piping in System (ft) | | | | | | | | | | | | | | | | | | |
|-----------------|--------------------------------|---|---------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 10 | 25 | 50 | 75 | 100 | 150 | 175 | 200 | 250 | 300 | 400 | 500 | 750 | 1000 | 1250 | 1500 | 1750 | 2000 | 3000 |
| | | Capacities (cfh) | | | | | | | | | | | | | | | | | | |
| 1/2 | 0.622 | 172 | 105 | 72 | 58 | 49 | 40 | 37 | 34 | 30 | 27 | 23 | 21 | 17 | 14 | 13 | 11 | 11 | 10 | 8 |
| 3/4 | 0.824 | 360 | 219 | 151 | 121 | 103 | 83 | 76 | 71 | 63 | 57 | 49 | 43 | 35 | 30 | 26 | 24 | 22 | 20 | 16 |
| 1 | 1.049 | 678 | 413 | 284 | 228 | 195 | 157 | 144 | 134 | 119 | 108 | 92 | 82 | 66 | 56 | 50 | 45 | 41 | 39 | 31 |
| 1 1/4 | 1.38 | 1,391 | 847 | 582 | 468 | 400 | 321 | 296 | 275 | 244 | 221 | 189 | 168 | 135 | 115 | 102 | 92 | 85 | 79 | 64 |
| 1 1/2 | 1.61 | 2,084 | 1,270 | 873 | 701 | 600 | 482 | 443 | 412 | 365 | 331 | 283 | 251 | 202 | 173 | 153 | 139 | 127 | 119 | 95 |
| 2 | 2.067 | 4,014 | 2,445 | 1,681 | 1,350 | 1,155 | 928 | 853 | 794 | 704 | 637 | 546 | 484 | 388 | 332 | 295 | 267 | 246 | 228 | 183 |
| 2 1/2 | 2.469 | 6,398 | 3,897 | 2,679 | 2,151 | 1,841 | 1,478 | 1,360 | 1,265 | 1,121 | 1,016 | 870 | 771 | 619 | 530 | 469 | 425 | 391 | 364 | 292 |
| 3 | 3.068 | 11,310 | 6,890 | 4,735 | 3,802 | 3,254 | 2,613 | 2,404 | 2,237 | 1,982 | 1,796 | 1,537 | 1,362 | 1,094 | 936 | 830 | 752 | 692 | 644 | 517 |
| 4 | 4.026 | 23,070 | 14,052 | 9,658 | 7,756 | 6,638 | 5,331 | 4,904 | 4,562 | 4,043 | 3,664 | 3,136 | 2,779 | 2,232 | 1,910 | 1,693 | 1,534 | 1,411 | 1,313 | 1,054 |
| 5 | 5.047 | 41,736 | 25,423 | 17,473 | 14,031 | 12,009 | 9,644 | 8,872 | 8,254 | 7,315 | 6,628 | 5,673 | 5,028 | 4,037 | 3,456 | 3,063 | 2,775 | 2,553 | 2,375 | 1,907 |
| 6 | 6.065 | 67,580 | 41,166 | 28,293 | 22,720 | 19,446 | 15,615 | 14,366 | 13,365 | 11,845 | 10,732 | 9,186 | 8,141 | 6,538 | 5,595 | 4,959 | 4,493 | 4,134 | 3,846 | 3,088 |
| 8 | 7.981 | 138,852 | 84,580 | 58,131 | 46,681 | 39,953 | 32,084 | 29,517 | 27,460 | 24,337 | 22,051 | 18,873 | 16,727 | 13,432 | 11,496 | 10,189 | 9,232 | 8,493 | 7,901 | 6,345 |
| 10 | 10.02 | 252,192 | 153,619 | 105,582 | 84,786 | 72,566 | 58,273 | 53,610 | 49,874 | 44,202 | 40,051 | 34,278 | 30,380 | 24,396 | 20,880 | 18,506 | 16,767 | 15,426 | 14,351 | 11,524 |
| 12 | 11.938 | 399,251 | 243,199 | 167,149 | 134,227 | 114,881 | 92,253 | 84,872 | 78,957 | 69,978 | 63,405 | 54,267 | 48,095 | 38,622 | 33,056 | 29,297 | 26,545 | 24,421 | 22,719 | 18,244 |

Source: Reprinted, with permission, from data developed by the Boston chapter of ASPE.
a I.D. (internal diameter) based on schedule 40 steel pipe.

NFPA Formula:

$$Q = 2313 \times D^{2.623} \times \left(\frac{h}{Cr \times L} \right)^{0.541}$$

OR: $D =$

$$D = \frac{Q}{19.17 \times \left[\frac{h}{Cr \times L} \right]^{0.206}}$$

Where:

Q = Flow (ft³/h)

D = Internal pipe diameter (in.)

h = Pressure drop (in. wc)

Cr = Correction factor of 0.61

L = Total equivalent length of system piping (ft)

Given:

h = 0.3 The pressure drop through the system

Cr = 0.61 Correction factor (= 0.61 if initial pressure < 1.5 psi)

S = 0.6 The specific gravity of the natural gas

Page 1 of 2

EXAMPLE - USING EQUATION (2)

$$Q = 1,000 \text{ FT}^3/\text{HR}$$

$$L = 300 \text{ FT}$$

$$h = 0.3 \text{ "W.C.}$$

$$C_R = 0.61$$

$$\rightarrow D = \frac{Q^{0.381}}{19.17 \times \left[\frac{h}{C_R \times L} \right]^{0.206}} = \text{INSIDE DIAMETER, INCHES}$$

$$D = \frac{1000^{0.381}}{19.17 \times \left[\frac{0.3}{0.61 \times 300} \right]^{0.206}}$$

$$D = \frac{13.8995}{19.17 \times [0.001639]^{0.206}}$$

$$D = \frac{13.8995}{19.17 \times 0.2668107}$$

TABLE 2 SAYS $2\frac{1}{2}$ " NOM. DIAM.

FOR \uparrow

$Q = 1,016 \text{ CFH}$
 $L = 300 \text{ FT}$

page 2 of 2