

MECHANICAL CODE DISCUSSION

Gas Pipe Sizing

we find the current requirements for gas piping installations in the 2012 International Residential Code (IRC)-Chapter 24; the 2012 International Fuel Gas Code (IFGC)-Chapter 4; and the 2015

Questar Good Practices for Gas Piping and Appliance Installations Handbook (QGP). While each reference contains unique information, all include

significant identical information on gas pipe sizing. As I continue to receive questions on gas piping sizing, virtually every week, it's time to revisit the subject, by answering a few of those questions. In each application listed below, I've included an example, stating the listed flow rate for a 50' line.

1. Which Tables should I use for standard 4 oz. meter sets, when using the longest length method?

- For steel (metallic) schedule 40 black pipe; less than 2 psi inlet pressure and 0.5 in. w.c. pressure drop: either IRC table G2413.4(1), IFGC table 402.4(2) or QGP table 4 (pg. 55). All are identical. Example:

a 1" line, 50' in length will flow 284 CFH.



- IFGC table 402.4(3) for less than 2 psi inlet pressure and **3.0 in. w.c. pressure drop** cannot be used on 4 oz. meter sets. This table applies only in 2 psi systems, where MP regulators are used, for piping after the MP regulator, having an outlet pressure of 8" or greater.

- Csst used on 4 oz. meter sets must use IRC table G2413.4(5), IFGC table 402.4(15) or QGP table 8 (pg. 58) for inlet pressure less than 2 psi and a 0.5 in. w.c. pressure drop. Do not use a pressure drop greater than 0.5 in. w.c. on a 4 oz. meter set. Tables in Csst manufacturers' installation guides may be used if the correct inlet pressure and pressure drops, as defined above are used. Manufacturers' tables are preferred over the general Csst table in QGP Handbook page 58, as the manufacturers'



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tables are specific to their tubing, typically listing slightly higher flow rates. *Example:* a 1" line, 50' in length will flow approximately 168 CFH.

2. Which Tables should I use for 2 psi meter sets with Medium Pressure (MP) regulators, when using the longest length method?

- For steel schedule 40 black pipe; 2 psi inlet pressure and 1.0 psi pressure drop: either IRC table G2413.4(2), IFGC table 402.4(5) or QGP table 5, pg. 56. All are identical. *Example:* a 1" line, 50' in length will flow 2490 CFH.
- IFGC table 402.4(3) for less than 2 psi inlet pressure and 3.0 in. w.c. pressure drop applies in 2 psi systems, where MP regulators are used, for metallic/steel piping after the MP regulator, having an outlet pressure of 8" or greater. *Example:* a 1" line, 50' in length, after the regulator, will flow 748 CFH. Again- do not use on a 4 oz. meter set.
- Csst tables for 2 psi inlet pressure and 1.0 psi pressure

drop, apply to tubing before the MP regulators. Tables IFGC 402.4(18), IRC G2413.4(6), QGP 6 (pg.57), or corresponding Manufacturers' table must be used in this type of installation. approximate flow rate for 1" line, 50' in length is approximately 1311 CFH.

- d. Csst used after the MP regulator on 2 psi meter sets must use tables IFGC 402.4(16), QGP 9 (pg.59) or corresponding manufacturers' tables. approximate flow rate for 1" line, 50' in length is approximately 421 CFH.



often leads to operational problems in tankless water heaters and other gas fired appliances.

you may have noticed in the examples above, the referenced standards may not include every table you may need for designs and installations. the IFGC includes the greatest assortment of tables (a total of 37), including 5 psi, tables for other piping materials, and for LP gas. If you don't have a current copy, contact the rMGa to purchase a

copy. If you are installing Csst, the manufacturers' tables, included in the installation and design guides, are your best source; however be certain to use the correct table.

also of interest, the IFGC allows sizing per a more complex calculation method (402.4), the longest length method commonly used (402.4.1), and the branch length method (402.4.2). Be prepared to provided diagrams, and calculations to local jurisdictions, for whichever method you may use.

Again, your questions and comments are always welcome. Merry Christmas, Happy Holidays!—Brent

Please notice the flow rates through a 1" line, 50' in length, vary from 168 CFH to 2490 CFH, completely dependent upon the type of pipe, the pressure and the allowed pressure drop. Failure to use the correct tables not only fails to comply with code requirement; but

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