

TABLE 4 FUEL PIPE SIZING

Natural Gas (Table values are maximum pipe run in feet.)

| kW | Pipe Size (in) | | | | | | |
|-------|----------------|-----|-------|------|-----|------|------|
| | 0.75" | 1" | 1.25" | 1.5" | 2" | 2.5" | 3" |
| 7-8 | 55 | 200 | 820 | | | | |
| 10 | 20 | 85 | 370 | 800 | | | |
| 13-14 | 10 | 50 | 245 | 545 | | | |
| 16-17 | | 40 | 190 | 425 | | | |
| 20 | | 20 | 130 | 305 | 945 | | |
| 22 | | 15 | 115 | 260 | 799 | | |
| 25 | | 10 | 95 | 220 | 739 | | |
| 27 | | | 85 | 203 | 552 | | |
| 30 | | | 60 | 147 | 565 | | |
| 35-36 | | | 35 | 95 | 370 | 915 | |
| 40 | | | 25 | 75 | 315 | 790 | |
| 45 | | | 15 | 60 | 260 | 650 | |
| 48 | | | | 50 | 230 | 585 | |
| 50 | | | | 50 | 220 | 560 | |
| 60 | | | | 25 | 145 | 390 | 1185 |
| 70 | | | | 5 | 75 | 225 | 710 |
| 80 | | | | | 65 | 195 | 630 |
| 100 | | | | | 40 | 140 | 460 |
| 130 | | | | | | 50 | 215 |
| 150 | | | | | | 30 | 150 |

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LP

LPG: 8.55 ft³/lb., 4.24 lbs./gal., 2500 btu/ft³
 LPG: 36.3 ft³ = 1 gal.

Natural Gas

1 cubic foot = 1,000 BTU
 1 therm = 100,000 BTU
 Gas consumption = 13,000-16,000 BTU per kW/hr

Pressure

1 inch mercury = 13.61 inches water column
 1 inch Water Column = 0.036 psi
 5-14 inches water column = 0.18 psi to 0.50 psi

LP Vapor (LPV) (Table values are maximum pipe run in feet.)

| kW | Pipe Size (in) | | | | | | |
|-------|----------------|-----|-------|------|------|------|------|
| | 0.75" | 1" | 1.25" | 1.5" | 2" | 2.5" | 3" |
| 7-8 | 165 | 570 | | | | | |
| 10 | 70 | 255 | 1000 | | | | |
| 13-14 | 45 | 170 | 690 | | | | |
| 16-17 | 25 | 130 | 540 | | | | |
| 20 | 15 | 115 | 480 | | | | |
| 22 | | 85 | 365 | | | | |
| 25 | | 60 | 275 | 605 | | | |
| 27 | | 55 | 260 | 575 | | | |
| 30 | | 40 | 195 | 435 | | | |
| 35-36 | | 20 | 125 | 290 | 1030 | | |
| 40 | | 15 | 107 | 250 | 890 | | |
| 45 | | | 82 | 195 | 725 | | |
| 48 | | | 70 | 165 | 620 | | |
| 50 | | | 70 | 160 | 610 | | |
| 60 | | | 45 | 115 | 445 | 1095 | |
| 70 | | | 20 | 60 | 260 | 660 | |
| 80 | | | 15 | 50 | 230 | 590 | |
| 100 | | | | 30 | 165 | 430 | 1305 |
| 130 | | | | | 70 | 205 | 660 |
| 150 | | | | | 45 | 150 | 490 |

Note:

- Pipe sizing is based on 0.5" H₂O pressure drop.
- Sizing includes a nominal number of elbows and tees.
- Please verify adequate service and meter sizing.

TABLE 5 LP VAPOR (LPV) TANK SIZING

Vapor Withdrawal

| Tank Capacity Total (Gal.) | Tank Capacity Useable (Gal.) | Minimum Temp (°F) | Tank Capacity (btu/hr.) | Length (Inches) | Diameter (Inches) | Overall Ht. (Inches) |
|----------------------------|------------------------------|-------------------|-------------------------|-----------------|-------------------|----------------------|
| 120 | 72 | 40 | 246,240 | 57 | 24 | 33 |
| | | 20 | 164,160 | | | |
| | | 0 | 82,080 | | | |
| 150 | 90 | 40 | 293,760 | 68 | 24 | 33 |
| | | 20 | 195,840 | | | |
| | | 0 | 97,920 | | | |
| 250 | 150 | 40 | 507,600 | 94 | 30 | 39 |
| | | 20 | 338,400 | | | |
| | | 0 | 169,200 | | | |
| 325 | 195 | 40 | 642,600 | 119 | 30 | 39 |
| | | 20 | 428,400 | | | |
| | | 0 | 214,200 | | | |
| 500 | 300 | 40 | 792,540 | 119 | 37 | 46 |
| | | 20 | 528,360 | | | |
| | | 0 | 264,180 | | | |
| 850 | 510 | 40 | 1,217,700 | 165 | 41 | 50 |
| | | 20 | 811,800 | | | |
| | | 0 | 405,900 | | | |
| 1000 | 600 | 40 | 1,416,960 | 192 | 41 | 50 |
| | | 20 | 944,640 | | | |
| | | 0 | 472,320 | | | |

| Load (kW) | BTU / Hr | LP Gal / Hr | NG Ft ³ / Hr | NG Therms/ HR |
|-----------|-----------|-------------|-------------------------|---------------|
| 5 | 110,000 | 1.2 | 110 | 1.1 |
| 10 | 176,400 | 2 | 156 | 1.6 |
| 15 | 231,800 | 2.5 | 220 | 2.2 |
| 20 | 294,000 | 2.9 | 294 | 2.6 |
| 25 | 352,800 | 3.8 | 316 | 3.2 |
| 30 | 418,300 | 4.5 | 417 | 4.2 |
| 35 | 467,400 | 5.1 | 485 | 4.8 |
| 40 | 550,000 | 6.1 | 550 | 5.5 |
| 50 | 675,000 | 7.5 | 675 | 6.7 |
| 60 | 836,600 | 9 | 862 | 8.6 |
| 70 | 1,035,700 | 11 | 1,020 | 10.2 |
| 80 | 1,170,000 | 12.7 | 1,154 | 11.5 |
| 90 | 1,200,000 | 13 | 1,200 | 12 |
| 100 | 1,280,000 | 13.8 | 1,260 | 12.6 |
| 110 | 1,550,000 | 17.1 | 1,550 | 15.5 |
| 120 | 1,675,000 | 18.5 | 1,675 | 16.7 |
| 130 | 1,800,000 | 19.5 | 1,786 | 17.8 |
| 140 | 1,925,000 | 21.3 | 1,925 | 19.2 |
| 150 | 2,050,000 | 22.7 | 2,050 | 20.5 |
| 200 | 2,800,000 | 30.9 | 2,800 | 28.0 |
| 300 | 4,100,000 | 45.3 | 4,100 | 49.0 |

| Gas Required For Common Appliances | |
|--|--|
| Appliance | Approximate Input BTU / Hr |
| Warm Air Furnace Single Family Multifamily, per unit | 100,000 60,000 |
| Hydronic Boiler, Space Heating Single Family Multifamily, per unit | 100,000 60,000 |
| Hydronic Boiler, Space and Water Heating Single Family Multifamily, per unit | 120,000 75,000 |
| Range, Free Standing, Domestic Built-In Oven or Broiler Unit, Domestic Built-In Top Unit, Domestic | 65,000 25,000 40,000 |
| Water Heater, Automatic Storage, 30 to 40 gal. Tank Water Heater, Automatic Storage, 50 gal. Tank Water Heater, Automatic Storage, Instantaneous 2 GPM 4 GPM 6 GPM Water Heater, Domestic, Circulating or Side-Arm | 35,000 50,000 142,800 285,000 428,000 35,000 |
| Refrigerator Clothes Dryer, Type 1 (Domestic) Gas Fireplace Direct Vent Gas log Barbecue Gas light Incinerator, Domestic | 3,000 35,000 40,000 80,000 40,000 2,500 35,000 |

Table Reprinted From Table 5.4.2.1, NFPA 54, 2002 ed.

| |
|---------------------------------|
| Operating Cost Per Hour |
| = |
| NG Therms/HR x Cost of NG Therm |

Note: Tank BTU capacity and generator run times based upon maintaining a minimum tank fuel level of 20%. Tanks are typically filled to 80% full.

Note: Typical fuel consumption based on a generator 100% loaded.