

Foodservice Gas Appliance Safety

Cleanliness in a commercial kitchen is an important issue that affects the health and safety of the public consuming the food being cooked and the workers preparing it as well. To properly clean equipment, appliance mobility is required to ease movement, servicing, and positioning; thus, equipment with permanent casters in lieu of fixed legs has become a standard practice in most kitchens. The casters have brakes to prevent accidental movement while cooking, and restraint cables are installed to limit the amount of appliance movement to prevent stress and damage to the gas connector. Quick-disconnect couplings are used to rapidly disconnect and reconnect connectors.

GAS CONNECTORS

Codes and product standards have been updated to include commercial-grade flexible gas connectors for all gas appliances in a commercial foodservice kitchen. The connector is often a forgotten specification item that goes unnoticed until cited by the code official at the final inspection and startup of the kitchen. If the designer or the foodservice consultant doesn't specify the connector, a residential appliance connector or a fixed, hard-piped installation may occur.

Commercial vs. Hard-piped and Residential Connectors
Heavy-duty, commercial-grade, flexible appliance gas connectors are used where the gas connection is located at the rear of the appliance and flexibility is required to hook up the unit (see Figure 1). They are designed to stand up to the demands of a commercial kitchen and

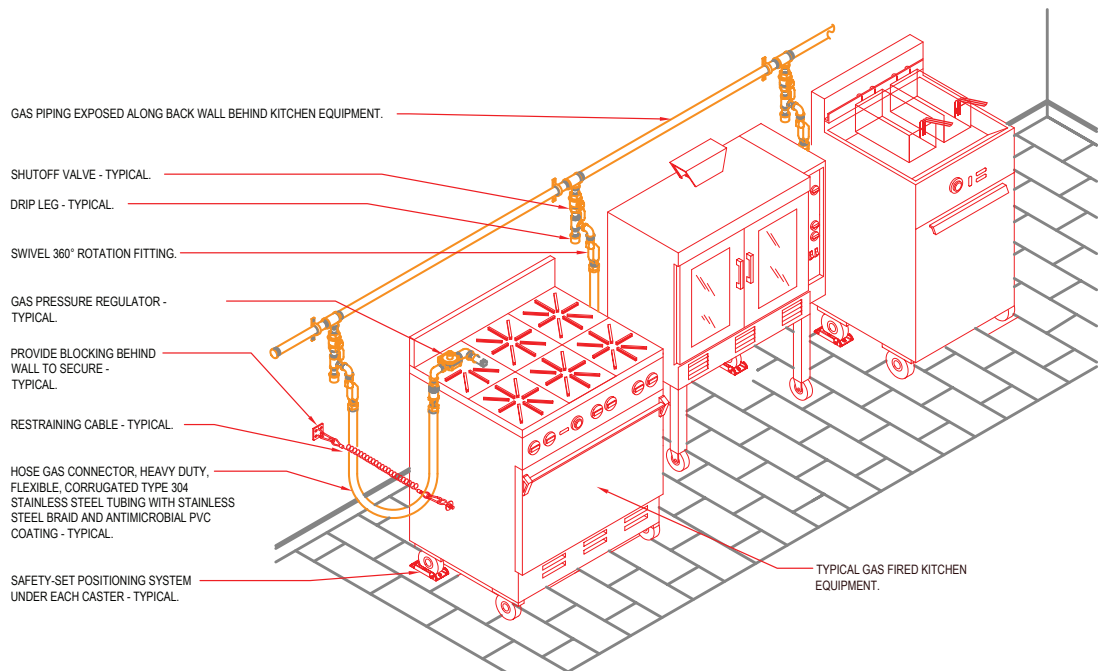
allow a more hygienic environment by providing easy access around the equipment. Their use increases efficiency and reduces operating costs, allows appliances to be set closer to the wall, and provides ease of mobility for cleaning and maintenance. They also meet updated code requirements, including ANSI Z21.69/CSA 6.16: *Connectors for Movable Gas Appliances* and CAN/CSA B149.1: *Natural Gas and Propane Installation Codes*.

Rigid or hard-piped connections are made to withstand physical damage; however, they are not practical for movement, and this immobility increases the chance of fire due to the buildup of oil, grease, and other flammable materials. Equipment with hard-piped connections is difficult to clean and maintain on a regular basis, which presents the potential for food contamination. Also, hard-piped connections do not comply with NSF certification.

Noncommercial (residential) flexible connectors are intended to be installed once and not be reinstalled, which could cause the metal to wear out and the connection to leak. These connectors are not intended to be repeatedly bent and twisted and can fail due to repeated movement. They are not NSF certified, and their use in a commercial kitchen may compromise and violate current ANSI/CSA and NSF standards and codes depending on the piece of equipment to which they are attached.

Connector Installation

Flexible connectors should not be hidden from view, enclosed in chases, or located behind walls in case leakage occurs. They should be accessible for replacement, if needed. For a commercial range, a 6-foot maximum length is permitted. Connectors are not allowed to be ganged together to get around the maximum length requirement.



DETAIL OF KITCHEN GAS PIPING REQUIREMENTS

SCALE: NONE

Figure 2 Commercial kitchen gas piping requirements



Figure 1 Gas ranges with flexible connectors. Photos courtesy of Dormont Co.

Connectors must be selected to provide the gas demand at the minimum pressure of the appliance. Figure 2 provides a detail of commercial kitchen gas piping requirements. **PSD**

RESOURCES

1. NSF International
2. ANSI Z21.69/CSA 6.16: *Connectors for Movable Gas Appliances*
3. ANSI Z223.1/NFPA 54: *National Fuel Gas Code*
4. CSA B149.1: *Natural Gas and Propane Installation Codes*
5. International Fuel Gas Code
6. Local codes and standards



James Stenqvist, CPD, LEED AP, is a project engineer with Diversified Technology Consultants in Hamden, Conn. For more information or to comment on this article, e-mail articles@psdmagazine.org. This article is meant to provide some basic guidelines. Always check all relevant codes and resources for a particular project.

CHECKLIST FOR FOODSERVICE GAS APPLIANCE SAFETY

Kitchen Safety and Cleanliness Principles

- Appliances must be cleaned.
- Appliances must be able to be moved.
- Appliances need flexible connectors.
- Flexible gas connectors must be durable.
- Flexible gas connector should be certified by NSF International.

Flexible Appliance Connectors

- Lengths shall not exceed 6 feet.
- Connectors shall be located in the same room as the appliance.
- Connectors shall enter a motor-operated appliance with a protected knockout opening.
- Listed and labeled connectors shall be in accordance with the manufacturer's installation instructions.
- Listed and labeled quick-disconnect devices shall be used with listed and labeled appliance connectors.
- Listed and labeled appliance connectors shall comply with ANSI Z21.69 and be listed for use with foodservice equipment having casters, or equipment that otherwise is subject to movement for cleaning, and other large movable equipment.

Gas Equipment Connection Compliance

- Utilize a commercial-grade flexible gas connector for all commercial foodservice gas-fired cooking equipment.
- Don't use residential-grade flexible connectors in commercial kitchens.
- Ensure that the gas connector is installed in a U shape.
- Don't hard-pipe the appliance to the gas supply line.
- Use a restraining cable for all flexible commercial-grade gas connector installations.
- The restraining cable must be connected at all times except when the cable and gas connector are disconnected for cleaning.

Gas Connector Installation Items

- Ensure that the gas supply and all appliance control knobs are turned off before making connections.
- The connector must not be concealed within or run through any wall, floor, or partition.
- Connectors shall not come into contact with surfaces at temperatures in excess of 230°F, sharp edges, or wiring.
- The final assembly shall be tested for leaks.
- An accessible manual shutoff valve must be installed at the outlet of the gas supply piping system upstream of the connector.
- Connectors are for use only on piping systems having a fuel gas pressure of 0.5 psi or less.
- Each piece of equipment must have its own shutoff valve.