

AERCO Gas Fired Equipment Electrical Power Wiring Guide **GF- 1060**

General

AERCO KC Gas Fired Water Heaters and Boilers are fully factory wired packaged units which require simple power wiring as part of the installation. This technical guide is intended to help designers provide electrical power wiring (Line Voltage) to KC units. Control wiring details are in other publications depending upon application. This is intended as a guide only, and cannot include all alternatives, situations, or be totally inclusive. To comply with all codes and authorities having jurisdiction, designers and installers must plan the electrical wiring carefully and execute the installation completely. Emergency shutoffs, fusible fire switches, break glass stations, and other electrical requirements, should be considered and installed whenever necessary.

Individual Unit Electrical Requirements

Each gas fired unit requires 115/1/60 power wiring to the factory mounted wiring box connection on the front right side of the chassis of the unit. The control circuit of each heater is fuse protected in accordance with NEC. All copper wiring should be used, and a proper ground wire must be connected to the terminal lug provided.

Each gas fired unit in operation has an electrical requirement of 8 amperes at full 1000 mbh input for a KC-1000. The electrical draw will decrease to approximately 4 amps

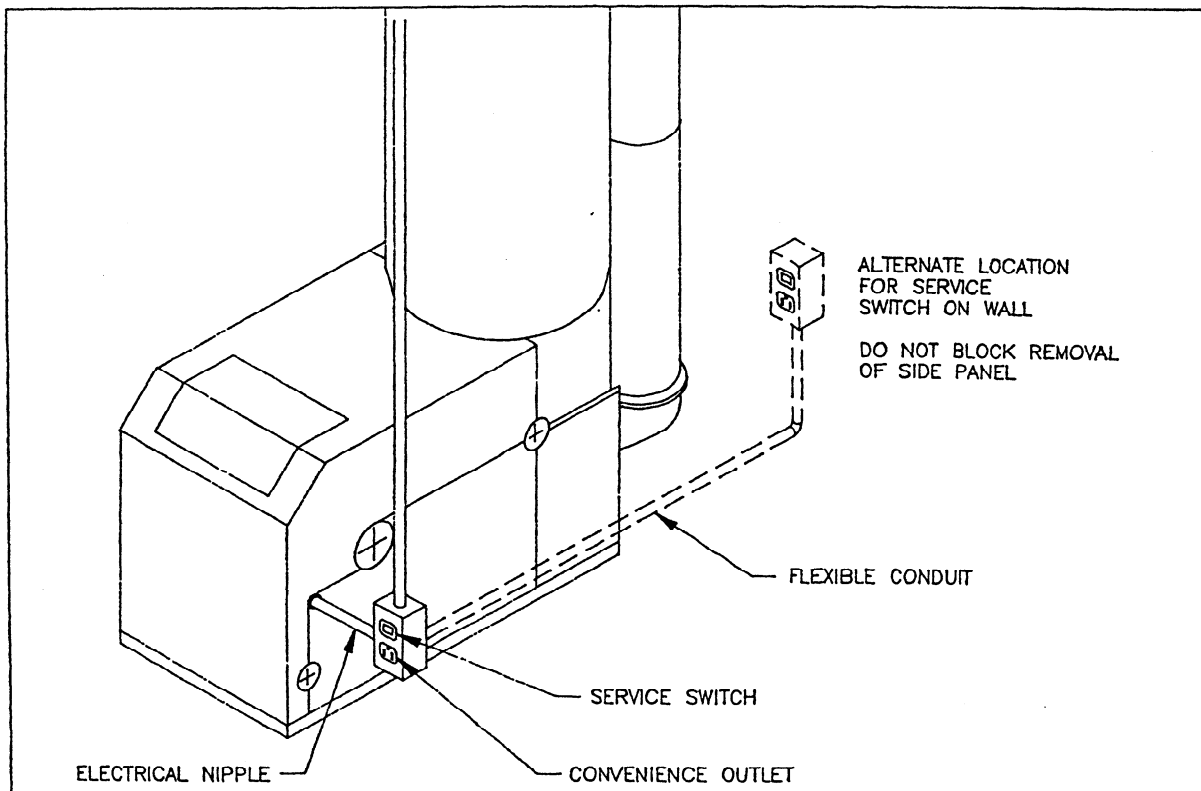
at minimum input. AERCO recommends that electrical designers allow a minimum of 20a service for each AERCO KC unit to be installed. Wire size and type should be made per the National Electrical Code based on length and load.

Provisions for Service

Designers must provide emergency shutoffs and other devices to satisfy electrical codes. It is also recommended to provide an electrical shutoff Service Switch of suitable load carrying characteristic on or near each KC heater. No electrical boxes or field components should be mounted to the surface of the heater. The Service Switch should be mounted in an electrical box at least 3-4 inches on a nipple directly off the unit as illustrated in Diagram 1. Wiring conduit, EMT, or other wiring paths should not be secured to the unit, but supported externally. *Nothing should be installed to block the removal of either side cover for service.* An electrical 115/1/60 outlet in the same box as the service switch makes a convenient connection for combustion analyzers, drop lights, or other service tools that might be required for service.

Electricians should be instructed as to where the wiring boxes should be located, such as away from relief valve discharge, drains, etc. Particularly on multiple unit installations, it is important that no wiring blocks access between heaters. This should be stressed to avoid service problems later.

Diagram 1
Service Switch Typical Location



Single Unit Wiring

When a single heater is to be installed, a dedicated protected circuit should be provided from the power source for connection. No other electrical devices should be permanently wired on the same circuit. An emergency switch (electrical shutoff) must be in series with the power to the unit.

Refer to Diagram 2 for proper field wiring of a typical single

water heater installation. See Diagram 3 for a single boiler space heating application. No shutoffs or electrical connections should be made in series between factory wired devices such as the high limit or low water cutoff controls. The factory wiring must not be altered or faults may be experienced. When used as a single unit, either water heating unit or a single boiler, control wiring other than external outdoor sensors or interlocks is integral to the unit..

Diagram 2
Single Water Heater Electrical Schematic

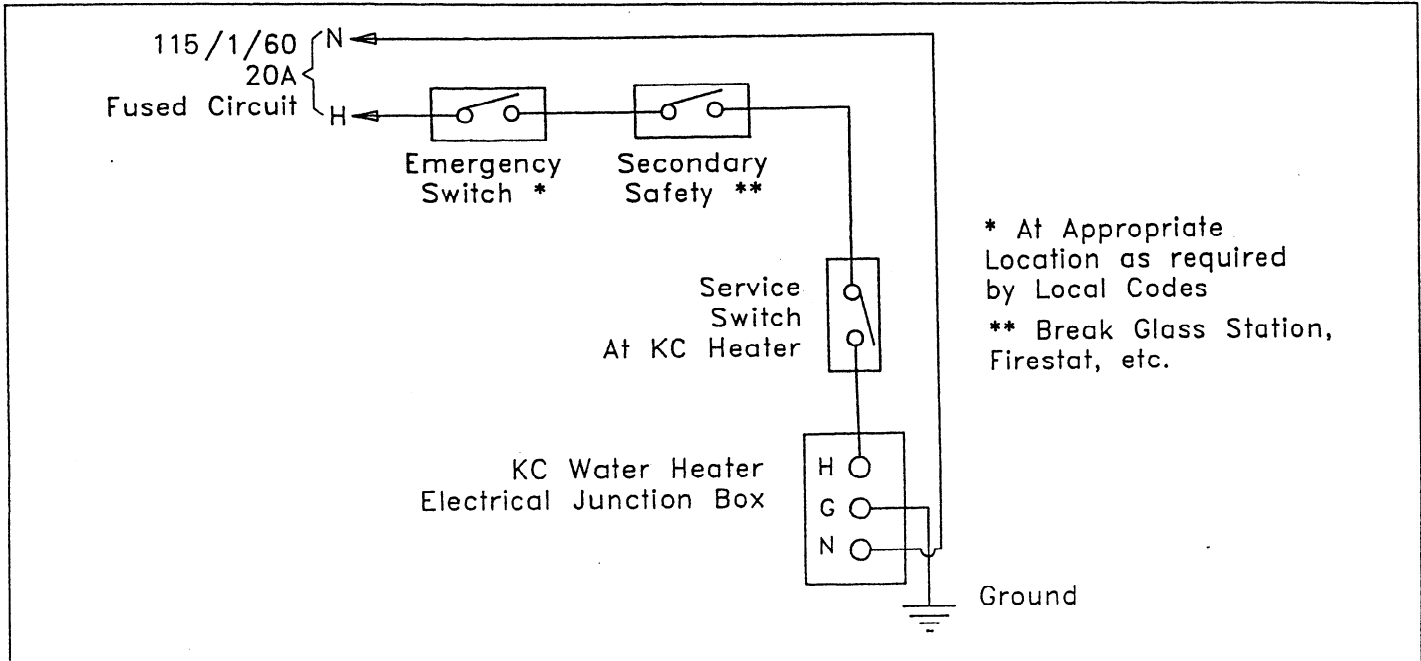
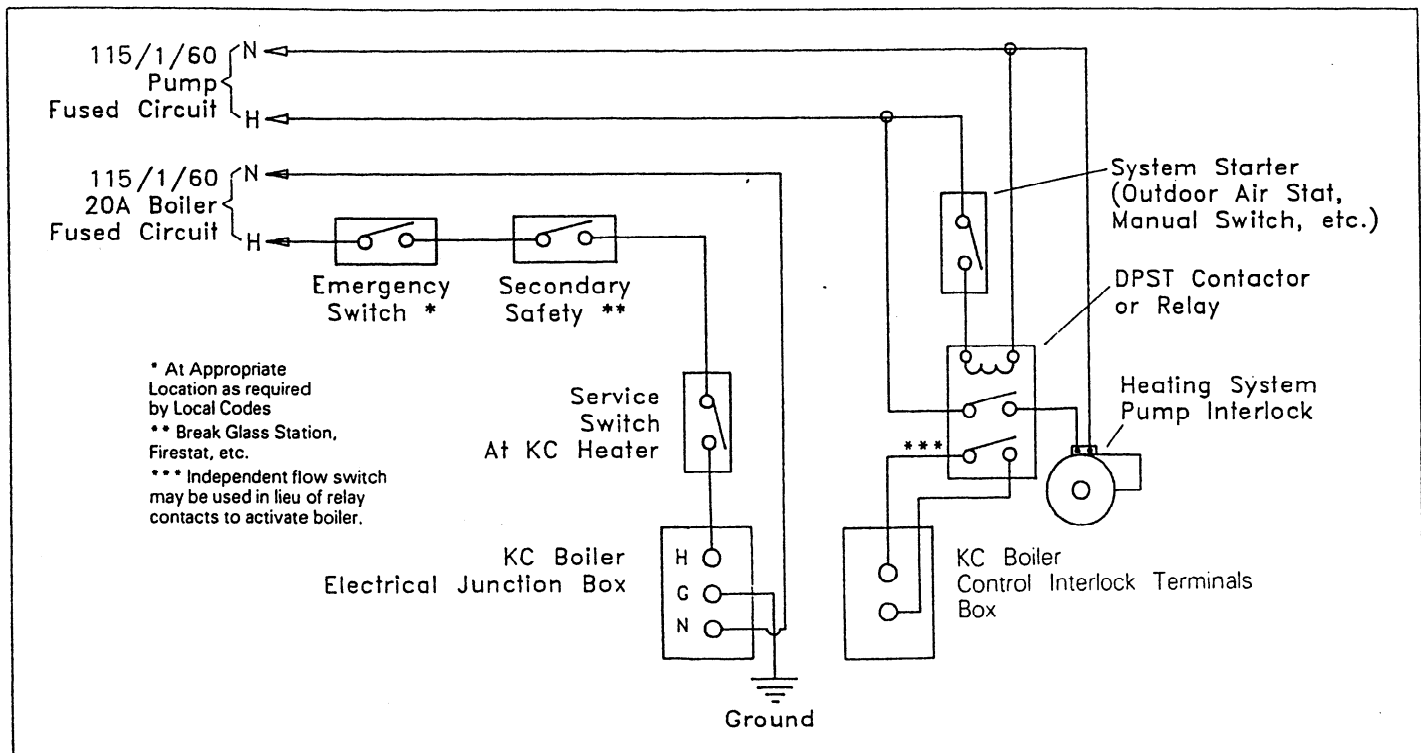


Diagram 3
Single Heating Boiler Schematic



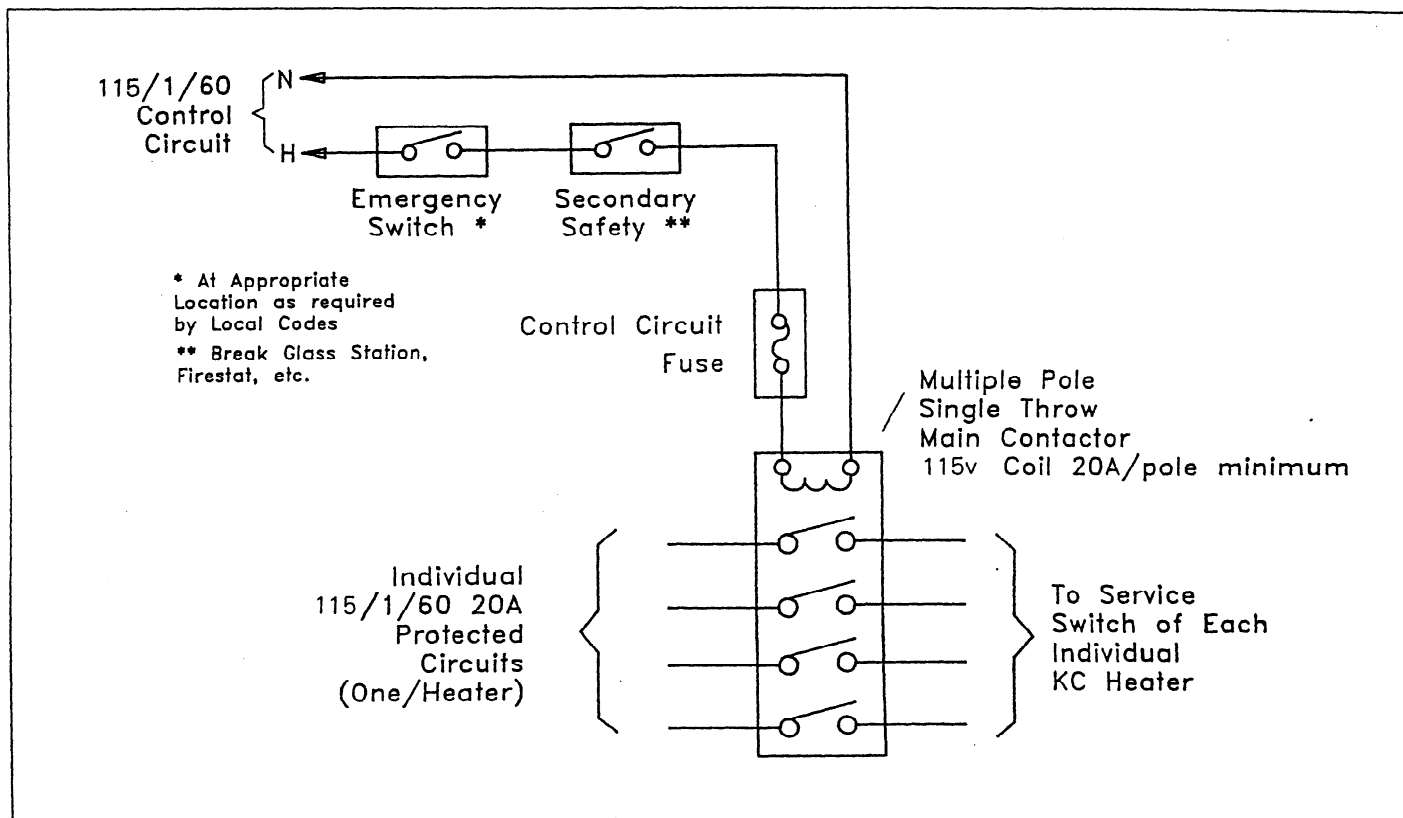
Multiple Unit Wiring

Whenever multiple units are installed within the same mechanical spaces, electrical code requirements call for a single electrical shutoff for emergency use. There are many different configurations that can be used to comply with common devices. AERCO provides the following as samples of how this can be accomplished, but it is the responsibility of the electrical designer to comply with local codes and regulations affecting an individual installation:

Multiple Protected Circuits

Depending on the available electrical service, an individual 20a electrical circuit may be allocated for each individual heater from an electrical supply panel. This is commonly used with installations of up to four heaters. For a common safety circuit, a multiple pole contactor can be used to provide power to the modules. Diagram 4 demonstrates how this is arranged with a separate 115v control circuit. Contactor pole ratings must be at least 20a per pole. Other electrical devices may be required other than those shown to comply with local requirements.

Diagram 4
Multiple KC Unit Protected Circuit Schematic

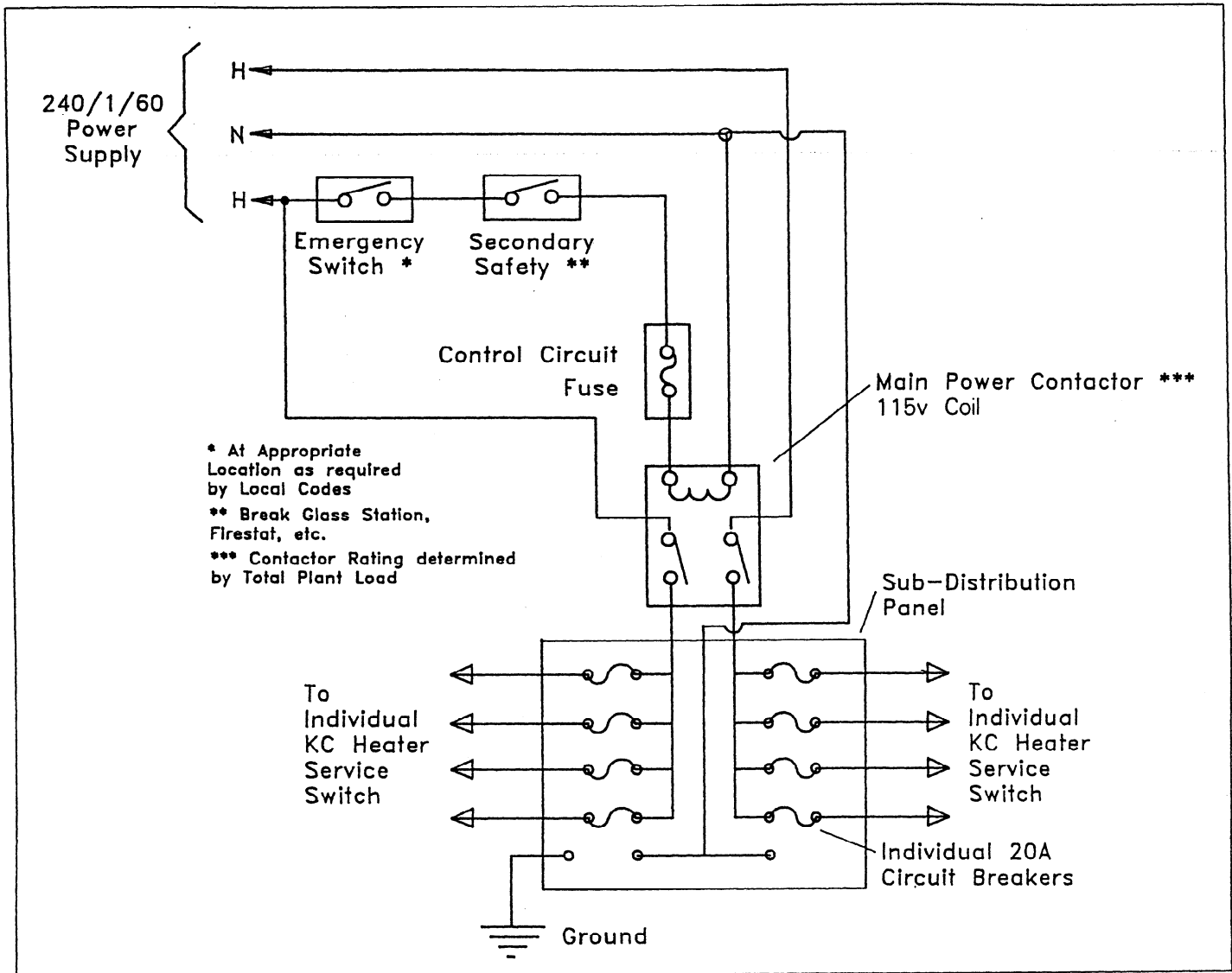


Sub-Distribution Panel

When power is supplied directly for the complete water heating or boiler plant from a larger power supply transformer or building panel, a sub-distribution panel with individual protection for smaller circuits can be utilized. Diagram 5 illustrates this concept. A Main Power Con-

tactor of sufficient current carrying capability must be used to break power to the entire sub-panel. This arrangement is normal for 3 or more units, or wherever individually protected circuits are not available for the individual heaters.

Diagram 5
Multiple KC Heater Sub-Distribution Schematic



HEAT EXCHANGERS | WATER HEATERS | BOILERS
 HEAT RECLAMATION SYSTEMS | CONTROL VALVES | STEAM GENERATORS



HOT WATER SYSTEMS

AERCO INTERNATIONAL, INC. | 159 PARIS AVE. | NORTHVALE, N.J. 07647
 (201) 768-2400 | TELEX 135450 • FAX 201-768-7789