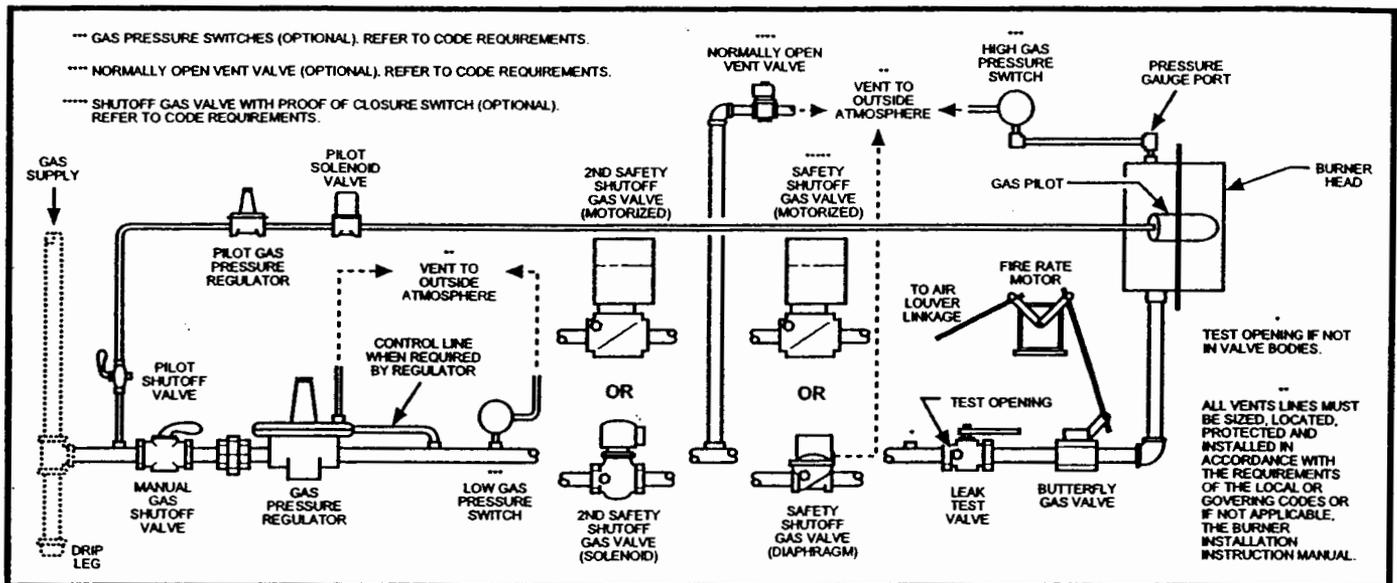


Modulating E2 - GAS SYSTEM

■ PROVEN LOW FIRE START



"E2" Gas System Schematic
(As shown meets U.L. requirements)

APPLICATION

The "E2" gas system is used for modulation or high-low proven low fire start control in firing. It is commonly used on burners with 1,000 MBh to 35,000 MBh capacity and is used in conjunction with the "F6R", "F7", "F7T", "F8", "F8H", "F9" and "F9H" oil systems for combination gas-oil models.

DESCRIPTION

The "E2" gas system uses motorized gas valves or quick opening solenoid gas valves and a modulating motor to provide a low fire and a high fire gas flow and simultaneously regulate the combustion air available to the burner. Gas pressure is adjusted and maintained by a pressure regulator. Head or orifice pressure is varied by a butterfly metering valve linked to the modulating motor. The gas butterfly metering valve is opened for high fire and gas is delivered to the orifices at the pressure setting of the pressure regulator. The air louver is also linked to the modulating motor, thus combustion air is increased proportionately as the orifice pressure increases.

OPERATING SEQUENCE

The burner motor starts on a call for heat by the operating control and the pre-purge cycle begins. At the end of pre-purge, the air louver must be in the closed (low fire) position for the low fire guarantee switch to close and allow ignition. Also, at the end of pre-purge, the ignition transformer is energized and the pilot valve opens, igniting the gas pilot.

The flame detector proves the flame and the safety shutoff gas valves open, supplying gas to the orifices at the low fire setting of the butterfly metering valve and the burner ignites at the low fire rate.

The ignition transformer and pilot valve are de-energized.

After a short delay, the modulating motor is switched to the control of a potentiometer or high-low controller, which drives the motor from the low fire position toward the high fire position to match the boiler load. Since both the air inlet louver and butterfly metering valve are linked to the modulating motor, the combustion air is increased proportionately as gas increases.

As the boiler load is overcome, the potentiometer or high-low controller drives the motor back toward the low fire position. On modulating units, the burner modulates over the range between low fire and high fire in response to the boiler load.

When the operating control is satisfied, the gas valves close and the burner motor is switched off, causing the burner to shut down and await the next call for heat.