

## GAS TRAIN REQUIREMENTS FOR GAS OR DUAL-FIRED STEAM BOILER

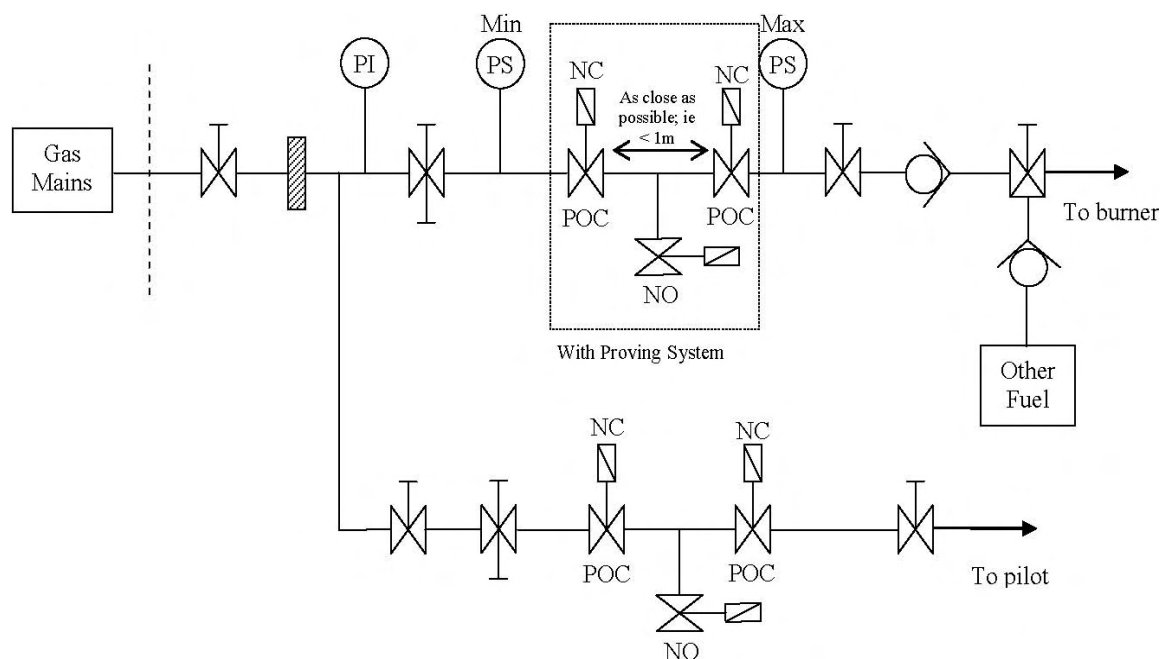







Table 1. Description of Components for Duel-Fuel Gas Train

Item	Description	Requirement/Testing
	Quick acting manual Stop valve	
	Strainer/filter (can be integral with upstream safety shut-off valve if valve connection size is DN 15 or greater and valve is not incorporating self-cleaning or shearing action)	Maximum strainer hole shall be not greater than 1.5 mm and the mesh shall not pass a 1 mm pin gauge
PI	Pressure gauge	Calibrated at least once a year
	Constant pressure governor	
PS Min	Pressure switch for minimum gas pressure	To be tested in accordance to BS5885
NC POC	Safety shut-off valve with proof of closure (with indicators), normally closed, installed in series. (for above 3000 kW system rating) (See note 1 for other system ratings)	Two class-A valves with proving system. They shall be designed and fitted to discourage unauthorised interference. To be tested for proof of closure prior to start-up. If check indicates that valve is not closed, start-up shall be prevented.
NO	Vent valve, with proof of closure (with indicator), normally opened. (for above 3000 kW system rating) (See note 1 for other system ratings)	It shall be designed and fitted to discourage unauthorised interference. To be tested for proof of open position. Failure to prove the vent valve in the correct open position shall prevent startup
PS Max	Pressure switch for maximum gas pressure	To be tested in accordance to BS5885
	Check valve	To prevent reverse flow of fuel into supply line of another fuel.
	Three-way valve	To switch completely from one fuel pipeline to another with proof of isolation of the fuel not in use before start-up.

## Notes

1. Each main gas supply shall be under the control of 2 safety shut-off valves in series as set out in table 2:

Table 2. Main gas safety shut-off valve system requirements

System rating (kW)	Valve system requirements
From 7.5 up to but excluding 60	2 safety shut-off valves of at least class-B
From 60 up to 600	1 class-A and 1 class-B safety shut-off valves
Above 600 up to 1000	2 class-A safety shut-off valves
Above 1000 up to 3000	2 class-A safety shut-off valves with a system check
Above 3000	2 class-A safety shut-off valves with proving system (to prove no leakage of the 2 safety shut-off valves)
BS EN 161: Class A valve has minimum sealing force over closure member orifice area of 150mbar. Class B valve has minimum sealing force over closure member orifice area of 50mbar The valves shall comply with BS7461 and BS EN 161.	

There shall be a proving system for burner with system rating of above 3000 kW to prove no leakage of the safety shut-off valves. These could be by means of:

- a) a plug or a solenoid valve (normally open type) on the pipe section between the two safety shut-off valves to channel to a gas sensing or pressure sensing system (with cut-off in the event of a leakage of the safety shut-off valves); or
- b) a proving system (also with cut-off) using a safe gas (eg Nitrogen) to pressurise the pipe section between the safety shut-off valves, and subsequent sensing of pressure loss in the event of a leakage in any one of the safety shut-off valves.

## 2. Gas Boosters

- a) Gas boosters shall not be installed without written approval from PowerGas/main gas supplier.
  - b) Burners fitted with a gas booster shall include means for causing lock-out of the booster in the event of the booster supply pressure falling below the minimum specified by the gas supplier.
3. Start-up gas train shall be of the same design and layout as the main gas train. Not applicable for LPG cylinder as source of start-up gas.

### Additional Notes on Dual-Fuel Systems

- a) Where it is necessary to have common pipework for more than one gaseous fuel, the pipework shall be so designed that the reverse flow of one fuel into the supply line of the other fuel is prevented.
- b) It is essential that the fuel not being fired be proven isolated prior to the commencement of the ignition sequence. The burner design should also ensure that failure of this proof of isolation at any time causes lock-out.
- c) On dual fuel burners, a fault condition may occur on a flame safeguard system monitoring one of the two fuels. **The burner should be so designed that start-up on that fuel is prevented and a fault condition is indicated.**

End