



# Gas Operations Standards

**TITLE: REQUIREMENTS FOR THE INSTALLATION OF GAS BOOSTERS AND BACK PRESSURE/ SUCTION PROTECTIVE DEVICES IN CUSTOMER GAS PIPING**

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GAS BOOSTERS AND BACK PRESSURE/  
SUCTION PROTECTIVE DEVICES IN  
CUSTOMER GAS PIPING**

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★ 1.0 **SCOPE**

This specification covers the installation of gas boosters and back pressure/suction protective devices on the customer's piping.

★ 2.0 **GAS ORGANIZATIONS APPLICABLE**

Westchester, Manhattan, and Bronx/Queens

★ 3.0 **RESPONSIBILITY**

3.1 Energy Services in each Customer Service Organization shall indicate on the electronic Service Information Request (SIR) in CORS, each item of customer utilization equipment using oxygen, air, or other gas under pressure, a gas booster (to increase the pressure) or stand-by liquefied petroleum gas (LPG) as a substitute for the Company's gas.

3.2 Gas Engineering shall determine whether the service size is adequate and inform Energy Services via the CORS SIR.

3.3 It shall be the responsibility of the customer, or the customer's engineer or contractor to arrange for the booster manufacturer to prepare, for Con Edison's approval, a one-line drawing showing the gas booster with the required protective devices.

3.4 No gas service shall be supplied to a customer who has not installed the necessary safety devices required by this specification.

★ 4.0 **GAS BOOSTER INSTALLATIONS**

4.1 Con Edison is required to supply a minimum pressure of 4" w.c. at the head of service. A hermetic gas booster with an explosion-proof motor, having the approval of a nationally recognized testing laboratory (i.e. UL or AGA), may be installed when supply gas pressure is not sufficient to supply new gas utilization equipment.

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★ 4.0 **GAS BOOSTER INSTALLATIONS** (Continued)

4.2 The gas booster shall be mounted and installed as per the manufacturer's specifications.

4.3 Protective Devices

A) Check Valve

A check valve shall be installed between the gas meter and the gas booster as shown in **Drawing No. 311296**. The check valve is required to prevent flow back through the gas meter and into the Con Edison gas distribution system. As stated in Specification G-8000, an Eclipse Series 1000 Disc Type Check Valve or the equivalent shall be used in all gas booster installations. The booster manufacturer shall specify the minimum distance between the check valve and the booster inlet.

B) Pressure Switches

1) A low gas pressure switch shall be installed between the gas meter and the check valve. The switch shall be the mercoid type or the equivalent as stated in Specification G-8041, and shall be set to open at 3" w.c. to shut the booster off. The switch shall have a manual reset and must be vented to the outside. The pressure switch shall be located as close as possible to the gas service point of entry. Venting is not required if explosion-proof switches are used.

2) A second low gas pressure switch may be installed on the outlet pipe of the gas booster. This second switch is optional and is used to alarm personnel of a booster failure.

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★ 4.0 **GAS BOOSTER INSTALLATIONS** (Continued)

4.4 **Branch Supply**

Branch supply to a load not requiring booster pressure shall be located on the upstream side of the check valve. Branch supply may be connected through the same meter or separate meter(s) depending on the service classifications involved.

4.5 **Piping**

Fittings, elbows and valves shall be kept to a minimum in order to reduce pressure losses. Piping from the gas point of entry to the booster(s) shall be designed by the booster manufacturer or its authorized representative to allow a maximum pressure drop of 1" w.c. (excluding the gas meter).

4.6 **By-Pass**

Some booster applications may require the installation of a by-pass. The decision of whether or not a by-pass is required shall be left up to the booster manufacturer or its authorized representative.

4.7 **Re-circulation Loop and Heat Exchanger**

A re-circulation loop with a heat exchanger and associated sensors and controllers shall be installed when specified by the booster manufacturer or its authorized representative. In general, this arrangement will be called for to keep the booster motor cool under low flow conditions.

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★ 4.0 GAS BOOSTER INSTALLATIONS (Continued)

4.8 Submittal

A) GAS BOOSTER DESIGN DATA SHEET

The booster manufacturer or its authorized representative shall submit to Con Edison Energy Services a completed Gas Booster Design Data Sheet (Appendix A).

B) DRAWING

The booster manufacturer or its authorized representative shall submit a job specific one-line drawing of the proposed booster installation to Con Edison Energy Services. The drawing shall indicate:

- the suggested piping design (by size and length) between the gas point of entry (P.O.E.) and the booster outlet;
- the location of all isolation valves, check valves, pressure switches, pressure gauges, boosters, and gas meters;
- by-pass piping, re-circulation loop, and heat exchanger if required.

4.9 Operational Tests

The customer's heating contractor/plumber shall conduct a series of operational tests of the boosters and the protective devices to insure proper working condition. Pressure test points must be installed near the low pressure cut-off switch and the booster inlet in order to allow for the performance of pressure checks called for herein. The tests shall be witnessed by the Company's Commercial Services Representative (CSR) and shall check for the following:

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★ 4.0 **GAS BOOSTER INSTALLATIONS** (Continued)

A) **Booster**

- The gas pressure at the booster inlet is at least 3" w.c.;
- The booster supplies adequate gas at maximum load (boilers firing at rated load).

B) **Low Pressure Cut-Off Switch (Booster Inlet)**

- The switch cuts-off the booster when the pressure drops below 3" w.c. as verified by a manometer;
- The switch can be manually reset after pressure is restored to >3" w.c.

C) **Check Valve**

- The check valve is installed in the proper direction.

★ 5.0 **PROTECTION FOR AIR OR OXYGEN GAS MIXTURES AT OR ABOVE 6" WC**

Consult with Gas Engineering on installations where air, oxygen, or other gas mixtures are required.

★ 6.0 **LIQUIFIED PETROLEUM GAS AS A STANDBY SOURCE**

Consult with Gas Engineering on installations where liquified petroleum is required as a standby source.

★ 7.0 **REFERENCES**

Reference should be made to Purchase and Test Specifications G-8000 "Purchase Specification for Gas Check Valves" and G-8041 "Gas Pressure Switches for Anti-Vacuum Protection."

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★ 8.0 **ATTACHMENTS**

Appendix A: Gas Booster Design Data Sheet  
Drawing No. 311296: Typical Gas Booster  
Installation

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Appendix A  
Gas Booster Design Data Sheet

Project Address \_\_\_\_\_

Load & Piping Information

Total # of Boilers \_\_\_\_\_ Total CFH (Min) \_\_\_\_\_ (Max) \_\_\_\_\_

Gas Service Diameter (From Con Ed Form 2-80) \_\_\_\_\_

Gas Meter Size & Type (From Con Ed Form 2-80) \_\_\_\_\_

Gas Pressure Available at Booster Inlet  
(4" W.C. @ Head of Service Minus Pressure Losses.  
Allow 0.5" W.C. For Pressure Drop Through Meter) \_\_\_\_\_

Gas Pressure Required at Manifold Inlet \_\_\_\_\_

Discharge Piping Diameter \_\_\_\_\_

Total Equivalent Length of Discharge  
Gas Piping Including Fittings \_\_\_\_\_

Total Discharge Piping Pressure Loss \_\_\_\_\_

Booster Information

Mfr \_\_\_\_\_ Model \_\_\_\_\_ Flow Capacity (CFH) \_\_\_\_\_

Booster Inlet Size \_\_\_\_\_ Outlet Size \_\_\_\_\_

Booster Motor HP \_\_\_\_\_ Voltage \_\_\_\_\_ Ph \_\_\_\_\_ Hz \_\_\_\_\_

Booster Differential Pressure (W.C.) \_\_\_\_\_

Total Discharge Pressure (W.C.) \_\_\_\_\_  
(Differential Pressure + 4" W.C.)

Control Panel Model \_\_\_\_\_ NEMA \_\_\_\_\_

Check Valve Size \_\_\_\_\_ Manifold Req'd: No \_\_\_\_\_ If Yes: # of Valves \_\_\_\_\_

Heat Exch'r Req'd: No \_\_\_\_\_ If Yes: Piping Size \_\_\_\_\_ Ck Valve Size \_\_\_\_\_

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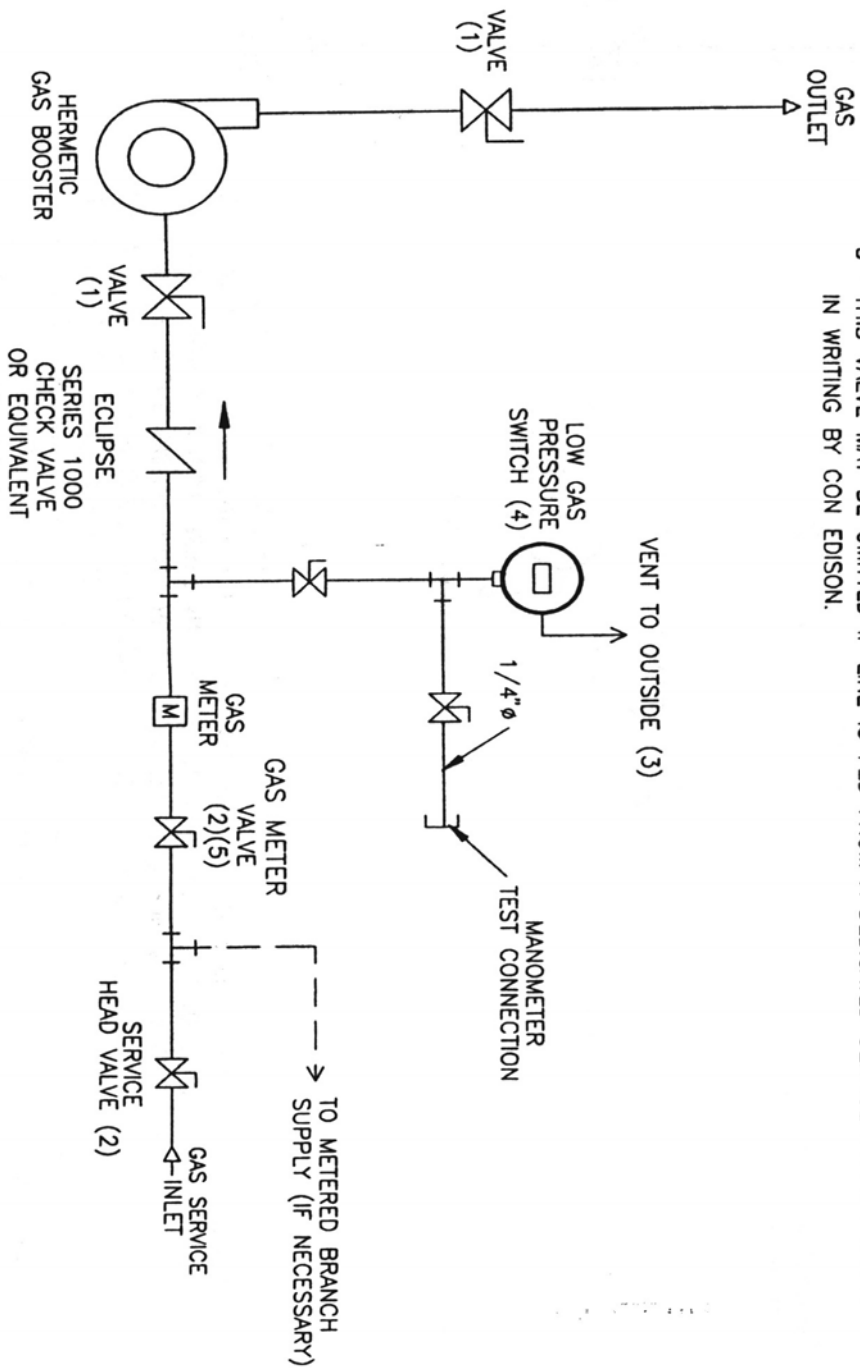
Submitted By \_\_\_\_\_ Date \_\_\_\_\_ Rev # \_\_\_\_\_

Company \_\_\_\_\_ Phone \_\_\_\_\_

(Booster Mfgr or Authorized Representative)



- NOTES:**
- 1- THIS VALVE MAY BE OMITTED IF BOOSTER IS IN CLOSE PROXIMITY TO ANOTHER DEDICATED SHUTOFF VALVE. SERVICE HEAD VALVE OR METER VALVE MAY REPLACE VALVE UPSTREAM OF BOOSTER. GAS TRIN VALVE MAY REPLACE VALVE DOWNSTREAM OF BOOSTER.
  - 2- CON EDISON APPROVED VALVE.
  - 3- VENTING IS NOT REQUIRED IF EXPLOSION PROOF SWITCHES ARE USED.
  - 4- LOW PRESSURE SWITCH SHALL BE WIRED TO BOOSTER CONTROL PANEL. SWITCH SHALL HAVE A MANUAL RESET AND BE SET TO OPEN AT 3" WC TO SHUT BOOSTER OFF.
  - 5- THIS VALVE MAY BE OMITTED IF LINE IS FED FROM A DEDICATED SERVICE AND APPROVED IN WRITING BY CON EDISON.



COMPUTER GENERATED DRAWING NOT TO BE HAND REVISED

REVISION  
USE .1 SIZE TEXT ONLY

REVISION SIGNATURES	
REV/ PROJECT ENGINEER	
0	<i>M. Inga</i>
	1/7/98

DWG. NO.	311296-0	
CON	DWG. TYPE	METERING
EDISON	DWG. SIZE	D
LOCATION: STANDARDS		
GAS OPERATIONS DEPT.		
TITLE: TYPICAL GAS BOOSTER INSTALLATION		
- APPROVALS -		
CHIEF ENGINEERING MANAGER:	<i>A. Codner</i>	1/7/98
PROJECT ENGINEER:	<i>M. Inga</i>	1/7/98
DESIGNER:	<i>N. Inga</i>	1/7/98
DRAWN BY:	<i>C. Williams</i>	1/7/98
SCALE:	N.T.S.	DISCIPLINE: <b>ENGINEERING</b>