

Graphic Symbols in Vacuum Technology

INTRODUCTION

Purpose. The purpose of this standard is to establish a uniform system of graphic symbols in vacuum technology.

Definition and Application. The graphic symbols are a shorthand used to show graphically the functioning and interconnections of vacuum components in a single-line schematic or flow diagram.

A single-line diagram is one in which the graphic symbols are shown without regard to the actual physical location, size, or shape, of the components.

A symbol shall be considered as the aggregate of all its parts.

The orientation of a symbol on a drawing, including a mirror image presentation, does not alter the meaning of the symbol.

A symbol may be drawn to any scale that suits a particular drawing.

Arrows should be omitted unless necessary for clarification.

Explanation. The graphic symbols are divided into two separate sections, general and specific symbols.

Wherever possible, the general symbol illustrates the function or appearance of a component without regard to special features.

The special symbols elaborate upon the general component categories with individual symbols, which illustrate in detail the special features of the component. Wherever possible, the special symbol utilizes the general symbol outline. Parts from two or more special symbols may be combined, as shown among others by valves Item No. 6, 8, and 9 in Example No. 3 at the end of this standard.

For definitions of the terms used in the description column, see American Vacuum Society, *Glossary of Terms used in Vacuum Technology* (Pergamon Press, New York, 1958).

List of Symbols

1. General Symbols

Item	Description	Symbol	Remarks
1	Pump		
1.1	Mechanical		
1.2	Diffusion		
1.3	Sorption		
2	Vacuum gauge		
3	Valve		
4	Baffle		

Item	Description	Symbol	Remarks
5	Feed-through		Including rotating, sliding and fixed
6	Vacuum chamber		
7	Lines		
7.1	Connected		Minimum diameter of dots five times line width
7.2	Not connected		

Approved by American Vacuum Society, Inc., 20 August 1965

Additional copies of this Standard are available at \$1 each from the secretary of AVS

II. Special Symbols

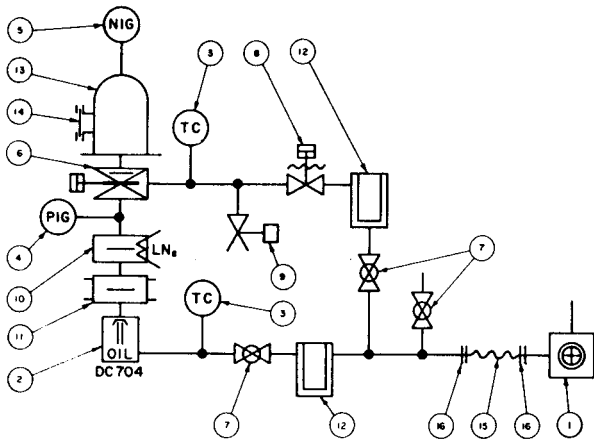
Item	Description	Symbol	Remarks
1.10	<u>Mechanical Pumps</u>		
1.11	Liquid-sealed, single-stage		
1.12	Liquid-sealed, compound		
1.13	Blower, lobe-type single-stage		
1.14	Blower, lobe-type compound		
1.15	Turbomolecular		
1.20	<u>Diffusion Pumps</u>		
1.21	Diffusion, oil		Optional: add chemical name of oil below symbol
1.22	Diffusion, mercury		
1.23	Diffusion, booster		Optional: add chemical name of oil below symbol
1.24	Diffusion-ejector		Optional: add chemical name of fluid below symbol
1.25	Ejector		
1.30	<u>Adsorption Pumps</u>		
1.31	Getter-evaporation		Use element symbol for designation of getter material
1.32	Sputter-ion		
1.33	Cryo		Vacuum line (solid) omitted on cryo panels Cryogenic lines (dotted) optional

Item	Description	Symbol	Remarks
1.34	Cryo-sorbent		
2.0	<u>Vacuum Gauges</u>		
2.1	Monometer, liquid level		
2.2	Monometer, diaphragm		
2.3	McLeod		
2.4	Thermocouple		
2.5	Pirani		
2.6	Ionization, cold cathode		
2.7	Ionization, hot cathode		
2.8	Knudsen		
2.9	Residual gas analyzer		
2.10	Radioactive		
2.11	Nude		To specify type of nude gauge, add after N the proper letter or letters from above list.
3.0	<u>Valves</u>		
3.1	Gate or slide		With seat orientation Without seat orientation
3.2	Gate, with bypass port		

Item	Description	Symbol	Remarks
3.3	Poppet or globe, in-line or angle		Diameter of dot approximately five times line width
3.4	Ball		
3.5	Butterfly or quarter swing		
3.6	Solenoid		
3.7	Pneumatic		
3.8	Bellows-sealed		
3.9	Throttling or calibrated leak		
3.10	Air admittance		
3.11	Stopcock 2-way, 2-position		
3.12	Stopcock 3-way, 2-position		
3.13	Stopcock 3-way, 3-position		
4.0	Baffles		
4.1	Ambient		
4.2	Refrigerated		For others substitute LN ₂ with name of coolant or cooling means.
4.3	Thimble trap		

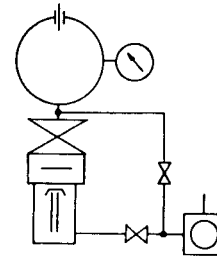
Item	Description	Symbol	Remarks
4.4	Sorbent		
5.0	<u>Feed-throughs</u>		
5.1	Rotating		
5.2	Sliding		
5.3	Bellows sealed		
5.4	Electrical		
6.0	<u>Vacuum Chambers and Accessories</u>		
6.1	Bell jar		
6.2	View port		
6.3	Blind flange port or door		
7.0	<u>Lines and Connections</u>		
7.1	Flexible line,		
7.2	Demountable coupling		

EXAMPLES
Special Symbols

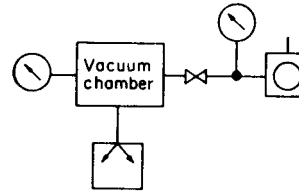


Example No. 1

EXAMPLES
General Symbols



Example No. 1



Example No. 2