

CGA P-81—2019

**STANDARD FOR
MICROBULK LIQUID NITROGEN
SUPPLY SYSTEMS**

FIRST EDITION

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Work Item 15-101

Bulk Distribution Equipment and Standards Committee

FIRST EDITION: 2019

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1 Scope

This publication provides a standard for microbulk liquid nitrogen supply systems. It contains minimum requirements and recommended practices for the design, construction, installation, operation, and maintenance of microbulk liquid nitrogen supply systems from the fill connection to the nitrogen discharge liquid and gas use outlet, see Figures 1 and 2. Additional information on liquid nitrogen is published in CGA P-9, *The Inert Gases: Argon, Nitrogen, and Helium*, CGA P-12, *Safe Handling of Cryogenic Liquids*, and CGA's *Handbook of Compressed Gases* [1, 2, 3].¹ This standard does not cover the use of portable tanks built to U.S. Department of Transportation (DOT) standards.

CAUTION: The piping and equipment beyond the storage container outlet valve is capable of releasing hazardous amounts of liquid nitrogen. Installation of piping and equipment downstream of the microbulk liquid nitrogen and gas use nitrogen supply shall be performed by personnel qualified by reason of training, education, and experience with the equipment used, to suitable standards and codes to preclude accidents and injuries.

While this publication is to be used as a standard for user installations, final approval of the design, equipment, appurtenances, and installation rests with the authority having jurisdiction (AHJ).

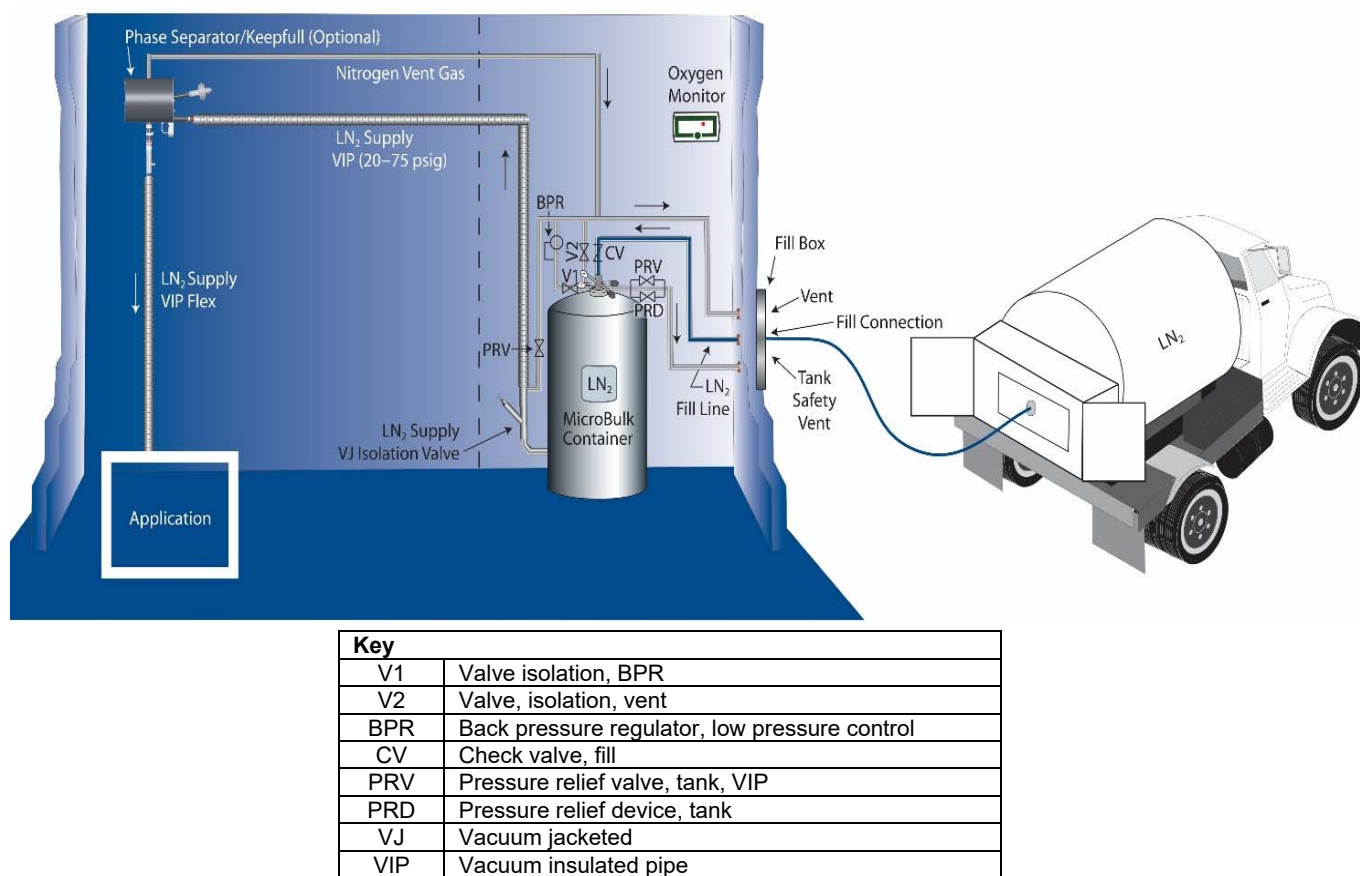
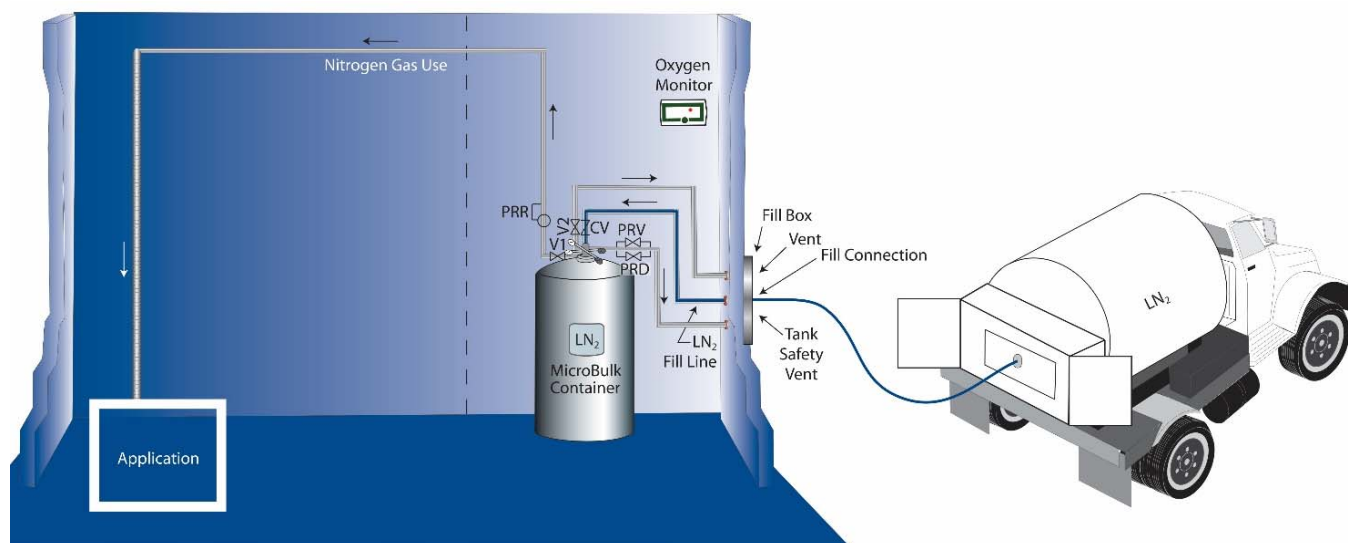


Figure 1—Typical microbulk liquid nitrogen supply system for liquid use

¹ References are shown by bracketed numbers and are listed in order of appearance in the reference section.



Key	
V1	Valve, isolation, gas use
V2	Valve, isolation, vent
CV	Check valve, fill
PRV	Pressure relief valve, tank
PRD	Pressure relief device, tank
PRR	Pressure reducing regulator, gas use

Figure 2—Typical microbulk liquid nitrogen supply system for gas use

2 Definitions

For the purpose of this publication, the following definitions apply.

2.1 Publication terminology

2.1.1 Shall

Indicates that the procedure is mandatory. It is used wherever the criterion for conformance to specific recommendations allows no deviation.

2.1.2 Should

Indicates that a procedure is recommended.

2.1.3 May

Indicates that the procedure is optional.

2.1.4 Will

Is used only to indicate the future, not a degree of requirement.

2.1.5 Can

Indicates a possibility or ability.

2.2 Technical definitions

2.2.1 Approved

Acceptable to the authorities having jurisdiction.

2.2.2 Appurtenances

All system components (excluding the container) such as pressure relief devices (PRDs), liquid level gauges, valves, pressure gauges, vaporizers, pumps, control equipment, and regulators.