

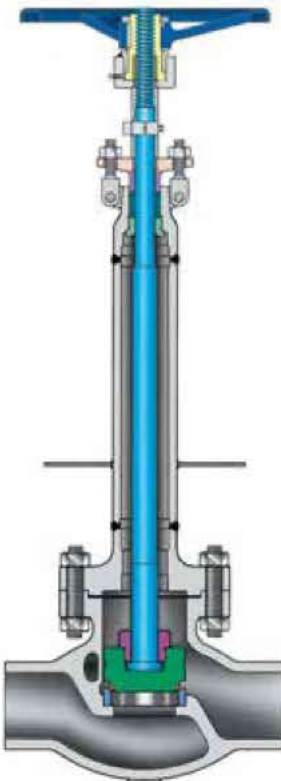
VELAN SPECIAL SERVICES

CAST STEEL CRYOGENIC VALVES

GATE VALVE



GLOBE VALVE



CAST CRYOGENIC GATE, GLOBE, AND CHECK VALVES AUSTENITIC STAINLESS STEEL, NPS 2–30 (DN 50–750)

PRESSURE CLASSES: 150–1500

The production, transport, and storage of liquefied gases such as oxygen, nitrogen, argon, natural gas, hydrogen, or helium (down to -425°F / -253.9°C) presents several technical problems. Velan specially-adapted extended bonnet cast valves offer safe and efficient service.

Materials

- **Body and bonnet:** Austenitic stainless steel castings used for bodies and bonnets offer excellent impact strength, minimal heat loss, and protection against corrosion.
- **Stem:** Austenitic stainless steel. To reduce galling, stems are also offered in A479 grade XM-19 with high toughness even at extreme low temperatures, excellent low friction, and galling-free movement at points of stem contact.
- **Wetted parts:** all Austenitic stainless steel and CoCr alloy.
- **Stem nut/yoke bushing:** Austenitic ductile iron Gr. D-2C.
- **Packing:** PTFE or graphite packing protected from freezing by a column of insulating gas.
- **Seating faces:** CoCr alloy is used to prevent seizing and galling. When extremely tight shutoff is required, globe and check valves are supplied with Neoflon, PTFE, or other soft inserts.
- **Bolting:** Strain-hardened Austenitic stainless steel.
- **Lubrication of stem nut:** Exxon Nebula Lubriplate No. 930-AA or Shell Darina EPI or equivalent.

Design features

- **Extended bonnets** with sufficient gas column length, usually specified by customer, are supplied for all valves to keep the stem packing at sufficient distance away from the cold fluid to remain functional.
- **Flexible wedges** with CoCr alloy seating faces for cryogenic service.
- **Neoflon inserts** are available for globe, piston, and swing check discs.
- **Cleaning:** All cryogenic valves are thoroughly degreased and cleaned and pipe ends are sealed to prevent contamination.

For more information on cryogenic valves see our on-line catalog (VEL-CRYO) at www.velan.com.

TABLE OF LIQUEFIED GASES

Type	Boiling point		Liquid density lb / ft. ³	Type	Boiling point		Liquid density lb / ft. ³
	°C	°F			°C	°F	
Natural gas (LNG)	-168	-270	26	Air	-194.4	-318	57.87
Methane (CH ₄)	-161.5	-258	26.20	Nitrogen (N ₂)	-195.8	-320	50.45
Oxygen (O ₂)	-182.9	-296	71.20	Hydrogen (H ₂)	-252.7	-423	4.43
Argon (Ar)	-185.9	-303	87.40	Helium (He)	-268.9	-452	7.82
Carbon dioxide (CO ₂)	-78.5	-109	50.60	Absolute zero	-273.16	-460	—