



CAVAGNA GROUP

Wherever gas is used, we are there

**High Purity and
Specialty Gases**

APPLICATIONS



GASES FOR THE ELECTRONIC INDUSTRY

The manufacturing of advanced electronic devices – such as processors for smartphones and computers, microchips, image sensors, and many other applications – requires the use of highly specialized gases. To ensure efficient, safe, and stable production processes over time, we supply high-performance UHP valves designed to meet the strictest purity and reliability standards. Our solutions support semiconductor manufacturers in maintaining clean and controlled production environments in line with the most demanding technological requirements.

GASES FOR THE CHEMICAL INDUSTRY

The chemical industry relies on high-quality components for the management of pure gases and complex gas mixtures. Our products are used in a wide range of applications, including refining processes, protection of sensitive substances from humidity and oxygen, inerting, reactor cooling, pH control, as well as testing and measurement activities in research centers. Our valves ensure safety, precision, and long-term reliability, even under the most challenging operating conditions.

CALIBRATION GASES

Calibration gases are essential reference standards used for the accurate adjustment of analytical instruments, such as gas analyzers and detectors. To guarantee reliable and repeatable measurements, these gases must maintain an extremely precise and stable composition over time, as in the case of zero gases or span gases. Our solutions are developed to meet the highest quality and accuracy requirements demanded by modern calibration applications.

Valves for Ultra-High Purity and Specialty Gases

NEW

Game-changing exclusive worldwide partnership between Kohda Valves and the Cavagna Group to bring to market globally the highly successful line of stainless steel diaphragm valves.

- » Manufactured in Japan
- » Long history with highly reliable design
- » Proven experience in most challenging gas applications, including electronics manufacturing and Specialty Gas applications.
- » Validated use in Hydrogen Chloride (HCl), Hydrogen Sulfide (H₂S), Nitrogen Trifluoride (NF₃), Silane (SiH₄), Germane (GeH₄), ...
- » International certifications: ISO, CGA...



VDA7 Series



VDC2 Series



VDA8 Series

Value of Valve **Kohda**



- » **Clean room assembly**
- » **100% Helium leak-tested**


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VGD Series Low Pressure Packed Seal valves

OVERVIEW AND APPLICATIONS

- » Corrosive gases: Ammonia (NH_3), Ethylene oxide ($\text{C}_2\text{H}_4\text{O}$), Sulfur dioxide (SO_2)
- » Low pressure (478 psig / 33 bars)

TECHNICAL FEATURES

- » Body materials compatible with corrosive gases: carbon steel or 304L Stainless steel
- » Stainless steel spindle
- » Double lock nut in the bonnet system

OPTIONS

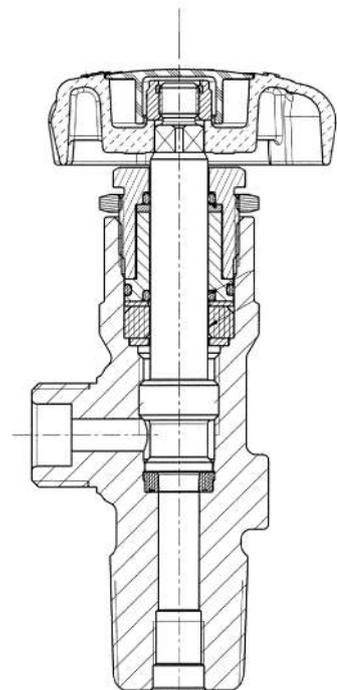
- » Anti-filling system
- » Dip tube inlet thread
- » Stainless steel outlet cap with chain
- » Nickel plating
- » Dip tube various lengths
- » Nickel plated nut

MATERIAL COMPONENTS

- » **Body Material:** 304L Stainless Steel or Carbon Steel
- » **Seat:** Kel-F (ring pad)
- » **Packing:** Nickel plated carbon steel nut with stainless steel sleeve
- » **Piston:** 303 stainless steel
- » **Gasket:** PTFE

TECHNICAL SPECIFICATIONS

- » Working Pressure: 33 bars (478 psig)
- » Temperature range: -20°C to $+65^\circ\text{C}$
- » Orifice: \varnothing 8.2 mm
- » Cv: 1.3



VGS Series High Pressure Packed Seal valves

OVERVIEW AND APPLICATIONS

- » Pure and Corrosive gases
- » Stainless steel body with soft seat

TECHNICAL FEATURES

- » Body materials compatible with corrosive gases: 304L Stainless steel
- » Stainless steel spindle with metal to metal tightness

OPTIONS

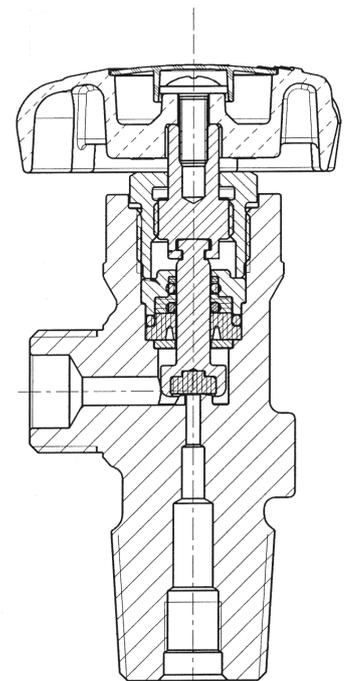
- » Dip tube inlet thread
- » Stainless steel outlet cap with chain
- » Dip tube various lengths

MATERIAL COMPONENTS

- » **Body Material:** 304L Stainless Steel
- » **Seat:** Kel-F (ring pad) or PTFE+15% graphite
- » **Packing:** 303 stainless steel
- » **Piston:** 303 stainless steel
- » **Gasket:** PTFE

TECHNICAL SPECIFICATIONS

- » Working Pressure: 200 or 230 bars (2,900 or 3,335 psig)
- » Temperature range: -40°C to +65°C
- » Orifice: Ø 2.5 mm
- » Cv: 0.19



VDA8 Series Brass High Pressure Diaphragm valves

OVERVIEW AND APPLICATIONS

- » Pure gases
- » Brass body diaphragm seal

TECHNICAL FEATURES

- » Diaphragm seal for higher sealing integrity
- » Non-rotating spindle

OPTIONS

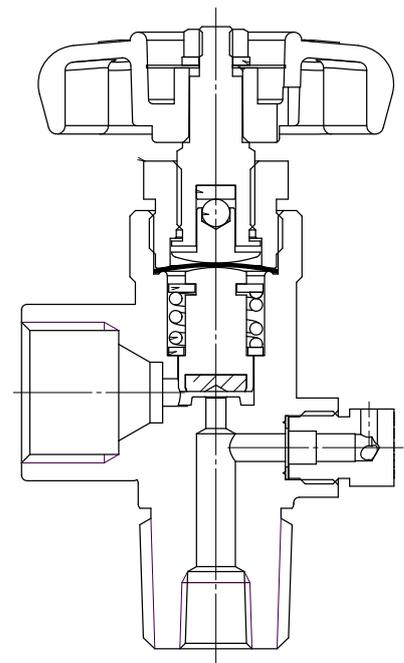
- » Dip tube inlet thread
- » Various bursting disc settings available
- » Cleaned for high purity applications
- » Gas tight outlet cap and chain

MATERIAL COMPONENTS

- » **Body Material:** Brass
- » **Diaphragm:** Hastelloy
- » **Spindle:** Brass
- » **Seat disc:** PA 66

TECHNICAL SPECIFICATIONS

- » Working Pressure: 207 bars (3,000 psig)
- » Temperature range: -20°C to +65°C
- » Orifice: Ø 3.6 mm



VDA7 Stainless Steel Spring Diaphragm valves

OVERVIEW AND APPLICATIONS

- » Purity grade > 4.5 Calibration, laboratories, food industry
- » High Purity, flammable and toxic gases
- » 3rd Generation of highly successful design
- » Lower number of parts for increased reliability and durability
- » Diaphragm prevents gas contact with valve operating mechanism
- » Low operating torque



OPTIONS

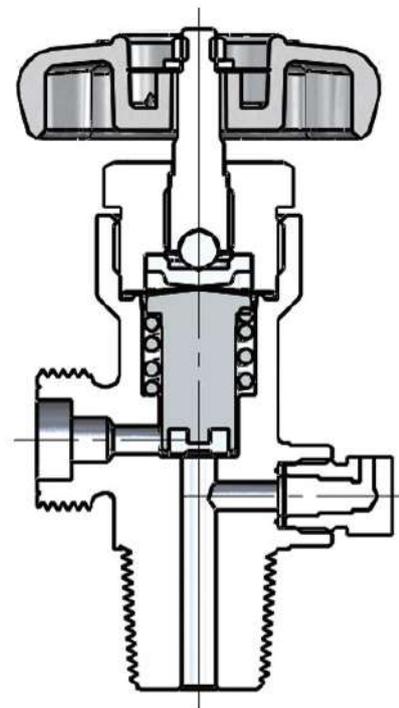
- » 1/4"-18 NPT inlet thread (dip tube)
- » Metal outlet cap
- » Safety relief device

MATERIAL COMPONENTS

- » **Body Material:** 316L Stainless Steel
- » **Diaphragm:** 316L Stainless Steel or Hastelloy
- » **Seat:** PCTFE (Kel-F) or PVDF (Kynar)

TECHNICAL SPECIFICATIONS

- » Working Pressure: 207 bars (2,900 psig)
- » Cv: 0.4
- » Life Cycle: 2,000 minimum
- » Helium External Leak Rate: 1.0E-7 atm.cc/sec
- » Certifications: ISO 10297 / CGA V-9
- » International Outlet connections
- » Straight and tapered cylinder inlets



VDC2 Stainless Steel Tied Diaphragm valves



OVERVIEW AND APPLICATIONS

- » Purity grade > 5.0 Ultra-high purity, flammable, toxic and corrosive gases
- » Springless welded diaphragm sealing design for increased purity and reliability
- » Minimal gas wetted internal volume
- » Absence of spring to reduce sources of impurities and particulates
- » Diaphragm prevents gas contact with valve operating mechanism

OPTIONS

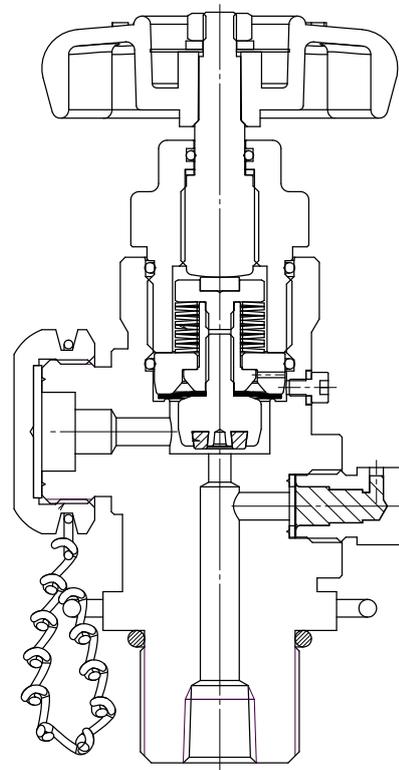
- » 1/4"-18 NPT inlet thread (dip tube)
- » Metal outlet cap
- » RFO outlet thread

MATERIAL COMPONENTS

- » **Body Material:** 316L Stainless Steel
- » **Diaphragm:** Hastelloy
- » **Seat:** PCTFE (Kel-F) or PVDF (Kynar)

TECHNICAL SPECIFICATIONS

- » Working Pressure: 200 bars (2,900 psig)
- » Cv: 0.5
- » Life Cycle: 2,000 minimum
- » Helium External Leak Rate: 1.0E-7 atm.cc/sec
- » Certifications: ISO 10297 / CGA V-9
- » International Outlet connections
- » Straight and tapered cylinder inlets



VDC2 Stainless Steel Tied Diaphragm DISS Outlet valves

OVERVIEW AND APPLICATIONS

- » Purity grade > 5.5
- » Ultra-High integrity service applications
- » Designed for CGA connections 630 / 710 service
- » Springless welded diaphragm sealing design for increased purity and reliability
- » Tapped vent hole for leak detection
- » Minimal gas wetted internal volume

OPTIONS

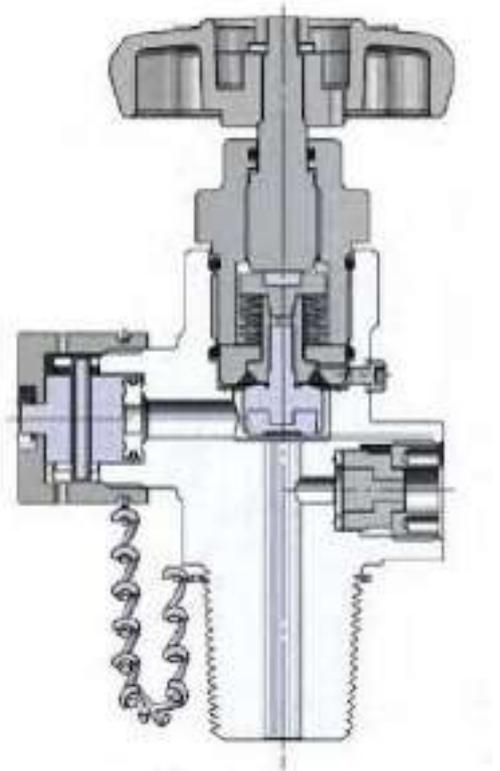
- » 1/4"-18 NPT inlet thread
- » Metal outlet cap with gasket
- » RFO outlet thread
- » Safety relief device

MATERIAL COMPONENTS

- » **Body Material:** 316L Stainless Steel
- » **Diaphragm:** Hastelloy
- » **Seat:** PCTFE (Kel-F®), PVDF (Kynar®), Vespel®

TECHNICAL SPECIFICATIONS

- » Working Pressure: 200 bars (2,900 psig)
- » Cv: 0.5
- » Life Cycle: 2,000 minimum
- » Helium External Leak Rate: 1.0E-7 atm.cc/sec
- » Certifications: ISO 10297 / CGA V-9
- » CGA 630 / 710 Outlet connections (DISS)
- » Straight and tapered cylinder inlets



GAS COMPATIBILITY

Gas Name	Chemical Formula	PTFE	PI	PCTFE	PVDF
1,1-difluoroethane (R152a)	C2H4F2	X	X	X	X
1,1-difluoroethylene (R1132a)	C2H2F2	X		X	X
1,3-butadiene	C4H6	X	X	X	X
1,1,1-Trichlorotrifluoroethane (R113a)	C2Cl3F3	X		X	X
1,1,1-Trifluoroethane (R143a)	C2H3F3	X		X	X
1,1,2,2-tetrafluoro-1-chloroethane (R124)	C2HClF4	X		X	X
1,1,2-Trichlorotrifluoroethane (R113)	C2Cl3F3	X		X	X
1,1-dichlorotetrafluoroethane (R114a)	C2Cl2F4	X	X	X	X
1,2-dibromotetrafluoroethane (R114B2)	C2Br2F4	X		X	X
1,2-dichlorotetrafluoroethane (R114)	C2Cl2F4	X	X	X	X
1-chloro-1,1-difluoroethane (R142b)	C2H3ClF2	X	X	X	X
1-chloro-1,2,2,2-tetrafluoroethane (R124)	C2HClF4	X		X	X
1-chloro-2,2,2-trifluoroethane (R133a)	C2H2ClF3	X	X	X	X
2,2-dimethylpropane	C5H12	X		X	X
Acetylene	C2H2	X		X	X
Ammonia	NH3	X		X	
Argon	Ar	X	X	X	X
Arsine	AsH3	X	X	X	X
Boron trichloride	BCl3	X		X	X
Boron trifluoride	BF3	X		X	X
Bromochlorodifluoromethane (R12B1)	CBrcIF2	X	X	X	X
Bromotrifluoroethylene (R113B1)	C2BrF3	X		X	X
Bromotrifluoromethane (R13B1)	CBrF3	X	X	X	X
Butane	C4H10	X	X	X	X
Carbon dioxide	CO2	X	X	X	X
Carbon monoxide	CO	X	X	X	X
Carbonyl fluoride	COF2	X		X	
Carbonyl sulfide	COS	X		X	X
Chlorine	Cl2	X		X	X
Chlorine pentafluoride	ClF5	X		X	
Chlorine trifluoride	ClF3	X		X	
Chlorodifluoromethane (R22)	CHClF2	X	X	X	X
Chloropentafluoroethane (R115)	C2ClF5	X	X	X	X
Chlorotrifluoromethane (R13)	CClF3	X	X	X	X
Cyanogen	C2N2	X		X	X
Cyanogen chloride	C1CN	X		X	X
Cyclopropane	C3H6	X	X	X	X
Deuterium	D	X	X	X	X
Diborane	B2H6	X	X	X	X
Dibromodifluoromethane (R12B2)	CBr2F2	X		X	X
Dichlorodifluoromethane (R12)	CCl2F2	X	X	X	X
Dichlorofluoromethane (R21)	CHCl2F	X	X	X	X
Dichlorosilane	SiH2Cl2	X		X	X
Difluoro methane (R32)	CH2F2	X	X		X
Dimethyl ether	C2H6O	X		X	X
Dinitrogen trioxide	N2O3	X		X	X
Disilane	Si2H6	X		X	X
Ethane (R170)	C2H6	X	X	X	X
Ethyl fluoride	C2H5F	X		X	X
Ethylacetylene	C4H6	X	X	X	X
Ethylene (R1150)	C2H4	X	X	X	X
Ethylene oxide	C2H4O	X	X	X	X
Fluoroform (R23) (Trifluoromethane)	CHF3	X			X
Germane	GeH4	X	X	X	X
Helium	He	X	X	X	X

*Materials compatibility provided for information purposes only.
Always confirm appropriate specifications before ordering.*

GAS COMPATIBILITY

Gas Name	Chemical Formula	PTFE	PI	PCTFE	PVDF
Heptafluoropropane (R 227)	C3HF7	X	X	X	X
Hexafluoroacetone	C3F6O	X		X	X
Hexafluoroethane (R116)	C2F6	X	X	X	X
Hexafluoropropylene (R1216)	C3F6	X	X	X	X
Hydrogen	H2	X	X	X	X
Hydrogen bromide	HBr	X		X	X
Hydrogen chloride	HCl	X	X	X	X
Hydrogen cyanide	HCN	X		X	X
Hydrogen iodide	HI	X		X	X
Hydrogen selenide	H2Se	X	X	X	X
Hydrogen sulfide	H2S	X	X	X	X
Isobutane (R601)	C4H10	X	x	X	X
Isobutylene	C4H8	X	X	X	X
Krypton	Kr	X	X	X	X
Methane (R50)	CH4	X	X	X	X
Methyl bromide	CH3Br	X	X	X	X
Methyl chloride (R40)	CH3Cl	X	X	X	X
Methyl fluoride (R41)	CH3F	X	X	X	X
Methyl mercaptan	CH4S	X		X	X
Methylacetylene	C3H4	X	X	X	X
Methylene fluoride (R32)	CH2F2	X	X		X
Natural gas (Methane)	CH4	X	X	X	X
Neon	Ne	X	X	X	X
Nitric oxide	NO	X		X	X
Nitrogen	N2	X	X	X	X
Nitrogen dioxide	NO2	X		X	X
Nitrogen trifluoride	NF3	X		X	X
Nitrogen trioxide	N2O3			X	X
Nitrous Oxide	N2O	X		X	X
Octafluorobut-2-ene (R1318)	C4F8	X		X	x
Octafluorocyclobutane (RC318)	C4F8		X	X	X
Octafluoropropane (R218)	C3F8	X	X	X	X
Oxygen	O2	X			
Pentafluoroethane (R 125)	C2HF5	X	X	X	X
Phosphorous pentafluoride	PF5	X		X	X
Propane (R290)	C3H8	X	X	X	X
Propylene (R1270)	C3H6	X	X	X	X
Silane	SiH4	X	X	X	X
Silicon tetrachloride	SiCl4	X		X	X
Silicon tetrafluoride	SiF4	X		X	X
Stibine	SbH3	X	X	X	X
Sulfur dioxide (R764)	SO2	X	X	X	X
Sulfur hexafluoride	SF6	X	X	X	X
Sulfur tetrafluoride	SF4	X	X	X	X
Sulfuryl fluoride	SO2F2	X		X	
Tetrafluoroethylene (R114)	C2F4	X		X	X
Tetrafluoromethane (R14)	CF4	X	X	X	X
Trichlorosilane	SiHCl3	X		X	X
Trifluoroethane	C2H3F3	X		X	X
Vinyl bromide (R140B1)	C2H3Br	X		X	X
Vinyl chloride (R1140)	C2H3Cl	X		X	X
Vinyl fluoride (R1141)	C2H3F	X		X	X
Vinyl methyl ether	C3H6O	X		X	X
Xenon	Xe		X	X	X

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