

## VETEC ROTARY PLUG VALVES FOR CRYOGENIC APPLICATIONS

# STRONG. RUGGED. RELIABLE.



Rotary plug valves by VETEC have a double-eccentric design. They feature high flow capacities and an excellent control accuracy at a high resolution. Typically, their  $K_{VS}$  and  $C_v$  coefficients are two to three times higher than those of conventional globe control valves and higher than those of similar products. Their rangeability of 200:1 also exceeds that of conventional control valves. When the closure member starts to move from the closed position, the valve plug lifts off the seat immediately and moves to the desired position virtually without any initial breakaway torque and without friction between the trim elements. As a result, the undesirable slip-stick effect is prevented. Very short transit times can be implemented without any problems. Thanks to their rugged double guiding, the rotary plug valves have an unobstructed cross-section of flow and do not need a shaft that would disrupt the flow path. As a result, flow turbulences are minimized and valves' service life is extended.

The VETEC rotary plug valves are suitable for handling all media: liquids, steam or gases. They master high pressure drops, handle severely contaminated, abrasive, caking or corrosive media and are suitable for many areas of the process industry. For 50 years, VETEC's rotary plug valves have proven

their worth in processes in the chemical, petrochemical, oil and gas industries, in refineries, the food and steel industries as well as in pulp and paper applications. In recent years, the valves have increasingly been used in water treatment as well.

## **Cryogenics**

Cryogenics are used to generate low temperatures. The physical effect of cryogenic temperatures is utilized in industrial processes to liquefy gases by condensation, which allows them to be transported and processed further. The valves used in these processes must retain their proper functioning and permanently prevent leakage even at cryogenic temperatures. The VETEC Type 82.7-01 Valves are tested by immersing them in liquid nitrogen and subjected to a functional inspection and test for internal and external leakage. The valves can be used in shut-off and throttling service down to  $-196\text{ }^{\circ}\text{C}$ . With our versatile insulating sections, the cryogenic packings and an optional soft seat seal, we are able to meet all requirements for cryogenic applications.

# TECHNICAL BENEFITS

## Various actuators, compact design

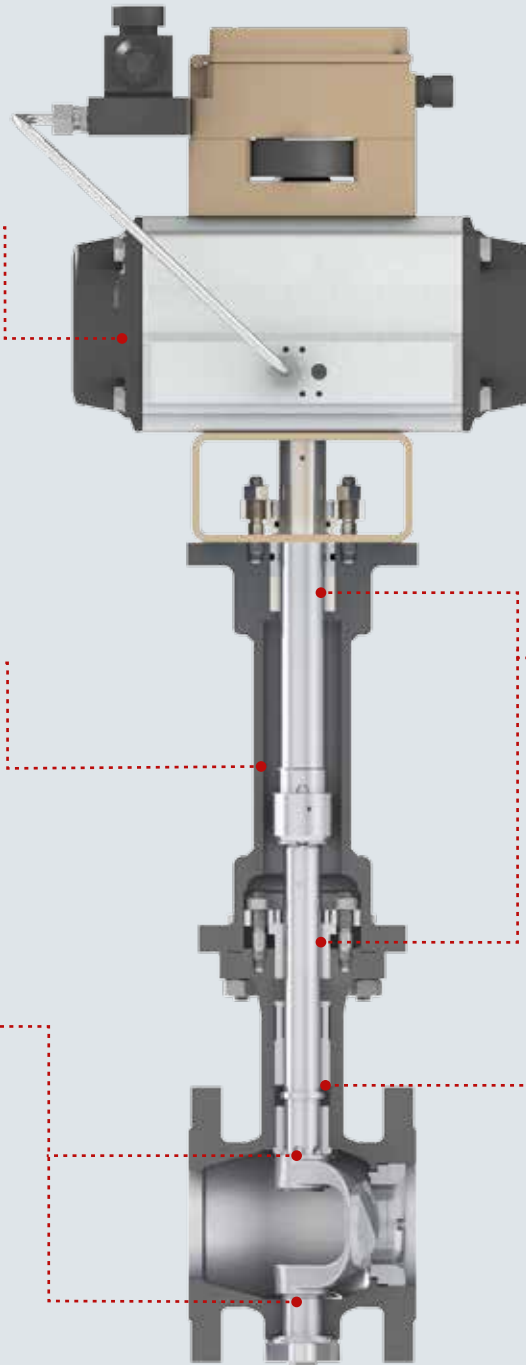
- Compact valve bodies and actuators with high torques are combined into space-saving assemblies. Different actuator types – diaphragm, piston or electric actuators – can be mounted.

## With or without insulating section

- The valves have a modular design and comply with the test specifications also without insulating section. Optionally, a standard extension bonnet and customized extensions are available.

## Long service life

- The fitted double guiding, which prevents jamming, is virtually free of wear. Thanks to the manufacturing tolerances, use at cryogenic temperatures is no problem.



## Packing system

- The packing system prevents external leakage even at  $-196\text{ }^{\circ}\text{C}$ . It is also available with an optional environmental seal according to VDI 2440.

## Operation

- Proper functioning and smooth rotary motion are retained even with liquefied gas.

# TYPICAL CRYOGENIC APPLICATIONS



## **LNG (Liquefied Natural Gas)**

Natural gas contains 98 % methane. It is extracted from subterranean deposits onshore or on offshore rigs, cleaned and depressurized for further processing. The extracted gas must be stored and transported for industrial processing or as an energy source. It is liquefied in a cryogenic process similar to air separation. During this process, the gas' volume is reduced by 600 times. This results in its density being only half that of water. Consequently, the compact substance can efficiently be transported over long distances at low cost.

## **FSRU (Floating Storage and Regasification Unit)**

The liquefied gas is stored and transported in insulated tanks on tanker ships at atmospheric pressure. At its destination, it is regasified and unloaded for further use.

Rotary plug valves by VETEC are used in the regasification process to control the flow rate or pressure. The expanded gas requires high flow rates at small pressure drops and high rangeabilities at small valve sizes. The perfect job for our rotary plug control valves.



### **Storage and regasification**

Alternatively, the liquefied gas is unloaded from the ship and regasified in plants onshore by applying heat. For this process, VETEC supplies rotary plug valves that control the flow rates. Our valves provide quick, efficient filling times and minimum volume tolerances. The strengths of the VETEC valves, i.e. high flow capacity, control accuracy and resolution, mean that our customers can cut costs.

### **LPG (Liquefied Petroleum Gas) as an alternative to LNG**

LPG is a mixture of propane and butane, i.e. hydrocarbon compounds comprising three or four carbon atoms. The gases are produced in refinery processes, liquefied under pressure and stored and transported in pressure vessels. VETEC valves are used in the liquefied gas circuits in the refineries as well as during regasification, where cryogenic temperatures occur during the evaporation process.

Thanks to their rangeability of 200:1, our rotary plug valves can control very high and very low pressure drops at the same tag using only one valve, which means that costly split-range solutions become obsolete.

### **Liquid ethylene**

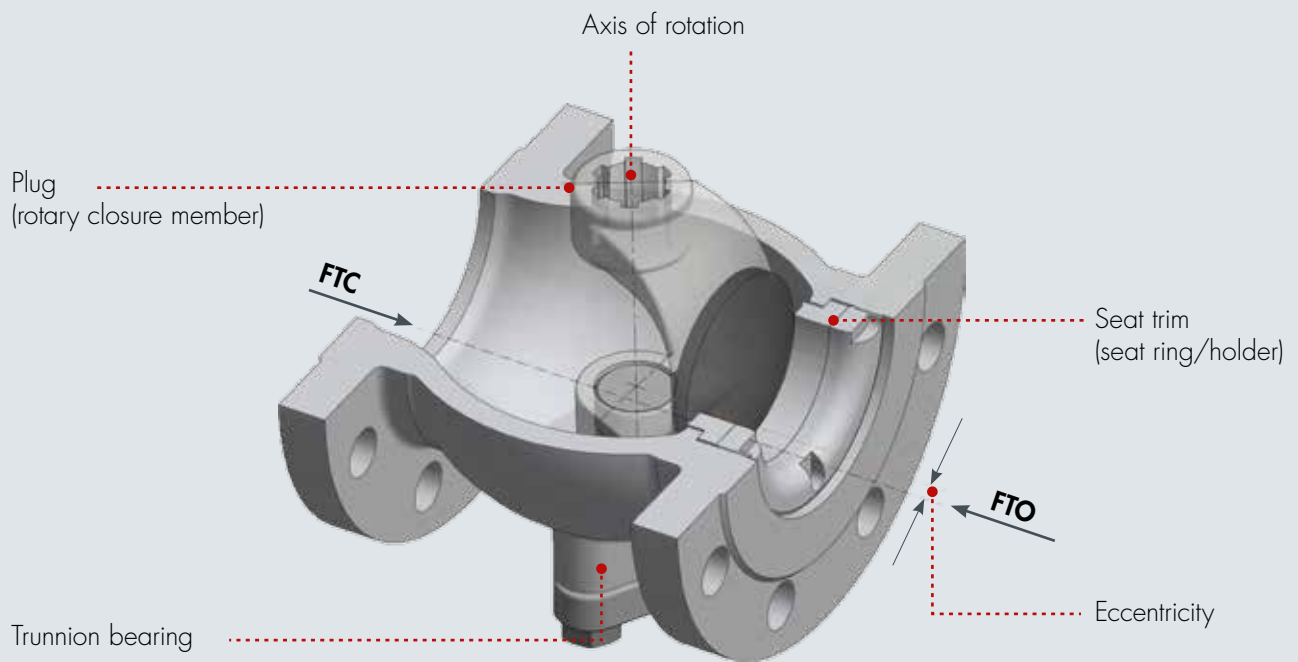
The ethylene gas fractionated in the olefin plant is liquefied under pressure by extracting heat. After that, the liquefied gas is ready for transport as a raw material for the chemical industry. VETEC valves are used to control the flow of cryogenic ethylene to the high-pressure pumps.

### **Liquid nitrogen**

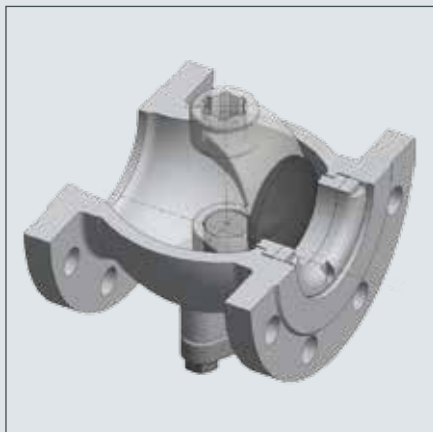
VETEC supplies rotary plug valves to control the flow rate in pump test benches. The pumps transport liquid nitrogen; they are used in industrial-grade freezing units, for example.

The VETEC valves work at small pressure drops on the suction side upstream of the cryogenic pump. The major benefits they provide compared to conventional globe valves are their higher  $C_v$  coefficients over all valve sizes and the resulting savings for the customer.

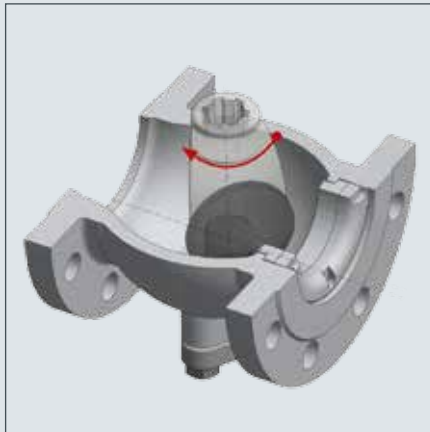
# TECHNICAL DATA



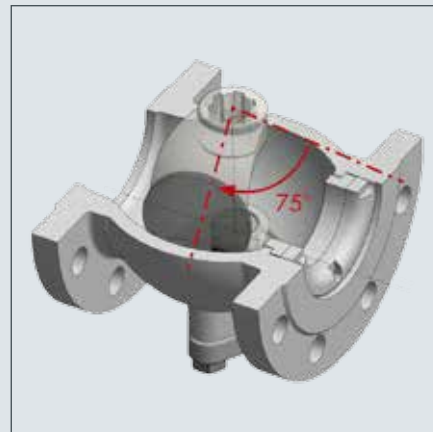
	DIN	ANSI
Valve sizes (other valve sizes on request)	DN 25 to 300	NPS 1 to 12
Pressure rating	PN 10 to 40	Class 150 to 300
Material	1.4408	A351 CF8M
	Other austenitic steels on request	
Cryogenic extension bonnet	Standard (70 to 230 mm) According to customer specifications	
Temperature range	Down to $-196\text{ }^{\circ}\text{C}$	Down to $-320\text{ }^{\circ}\text{F}$
Flow coefficients	$K_{vs}$ 4 to 2100	$C_v$ 4.6 to 2428
Cryogenic certification	On request	On request
Face-to-face dimensions Series 82.7-01 Short design	EN 558	SA 75.08.02 IEC 60534-3-2



Valve CLOSED



Valve opens



Valve OPEN

# SAMSON AT A GLANCE

## STAFF

- Worldwide 4,000
- Europe 3,300
- Asia 500
- Americas 200
- Frankfurt am Main, Germany 1,600

## MARKETS

- Chemicals and petrochemicals
- Power and energy
- District heating and cooling, building automation
- General industry
- Industrial gases
- Food and beverages
- Metallurgy and mining
- Oil and gas
- Pharmaceuticals and biotechnology
- Marine equipment
- Water and wastewater
- Pulp and paper

## PRODUCTS

- Valves
- Self-operated regulators
- Actuators
- Valve accessories
- Signal converters
- Controllers and automation systems
- Sensors and thermostats
- Digital solutions

## SALES SITES

- More than 50 subsidiaries in over 40 countries
- More than 200 representatives

## PRODUCTION SITES

- SAMSON Germany, Frankfurt, established 1916  
Total plot and production area: 150,000 m<sup>2</sup>
- SAMSON France, Lyon, established 1962  
Total plot and production area: 23,400 m<sup>2</sup>
- SAMSON Turkey, Istanbul established 1984  
Total plot and production area: 11,053 m<sup>2</sup>
- SAMSON USA, Baytown, TX, established 1992  
Total plot and production area: 9,200 m<sup>2</sup>
- SAMSON China, Beijing, established 1998  
Total plot and production area: 10,138 m<sup>2</sup>
- SAMSON India, Pune district, established 1999  
Total plot and production area: 18,000 m<sup>2</sup>
- SAMSON Russia, Rostov-on-Don, established 2015  
Total plot and production area: 5,000 m<sup>2</sup>
- SAMSON AIR TORQUE, Bergamo, Italy  
Total plot and production area: 27,684 m<sup>2</sup>
- SAMSON CERA SYSTEM, Hermsdorf, Germany  
Total plot and production area: 14,700 m<sup>2</sup>
- SAMSON KT-ELEKTRONIK, Berlin, Germany  
Total plot and production area: 1,060 m<sup>2</sup>
- SAMSON LEUSCH, Neuss, Germany  
Total plot and production area: 18,400 m<sup>2</sup>
- SAMSON PFEIFFER, Kempen, Germany  
Total plot and production area: 35,400 m<sup>2</sup>
- SAMSON RINGO, Zaragoza, Spain  
Total plot and production area: 18,270 m<sup>2</sup>
- SAMSON SED, Bad Rappenau, Germany  
Total plot and production area: 10,370 m<sup>2</sup>
- SAMSON STARLINE, Bergamo, Italy  
Total plot and production area: 26,409 m<sup>2</sup>
- SAMSON VETEC, Speyer, Germany  
Total plot and production area: 27,090 m<sup>2</sup>



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