

# MAXIMUM MODULARITY

*Globe Control Valve Type 3251-E*

SAMSON



SMART IN FLOW CONTROL

OUR INNOVATION – YOUR BENEFIT

# MAXIMUM MODULARITY

## 3251-E – Features & Benefits



### 1 Interchangeable Seat Retention Designs

- Clamped seat retained by threaded ring provides an unobstructed flow path
- Cage retained seat allows for various noise attenuation options
- Designs are interchangeable in the field



### 2 Multiple Plug Designs

- V-Port – 3-point seat guiding reduces vibration and is debris friendly
- Cage guiding – Full guiding for heavy vibration, inherent pressure balancing, and special noise attenuation options

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### 3 Various Noise Attenuation Options

- Flow Divider I
- LDB Cage
- Optional downstream orifice plates

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### 4 Increased Guiding

- Enlarged guiding surface area ensures precise plug alignment for our stem guided trim
- Enlarged lower stem area functions an anti-blowout feature

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### 5 Multiple Packing Designs

- Internal spring-loaded packing – simple design with minimal components while still providing excellent sealing
- External flanged live-loaded packing – ISO 15848 certified low-emission packing, also suitable in PTFE for extended temperature ranges
- Roller burnished stem reduces friction, external leakage, and maximizes packing life beyond what basic polishing can offer from competitors

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### 6 Separate Yoke and Actuator

- Allows for actuator removal in the field without having to open the valve
- Separate pieces results in actuators that have much lower weight for easier handling during maintenance
- Entire actuator & positioner can be rotated 360° without disassembly

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### 7 SAMSON Smart Devices

- Easy push-button positioner initialization
- Accepts all SAMSON positioner types
- Intrinsically Safe & Explosion Proof options available
- EXPERTPlus diagnostics
- Various communication protocols

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### 8 Integral Positioner Attachment to 3277 Actuator

- Eliminates tubing
- Protects mechanical feedback linkage

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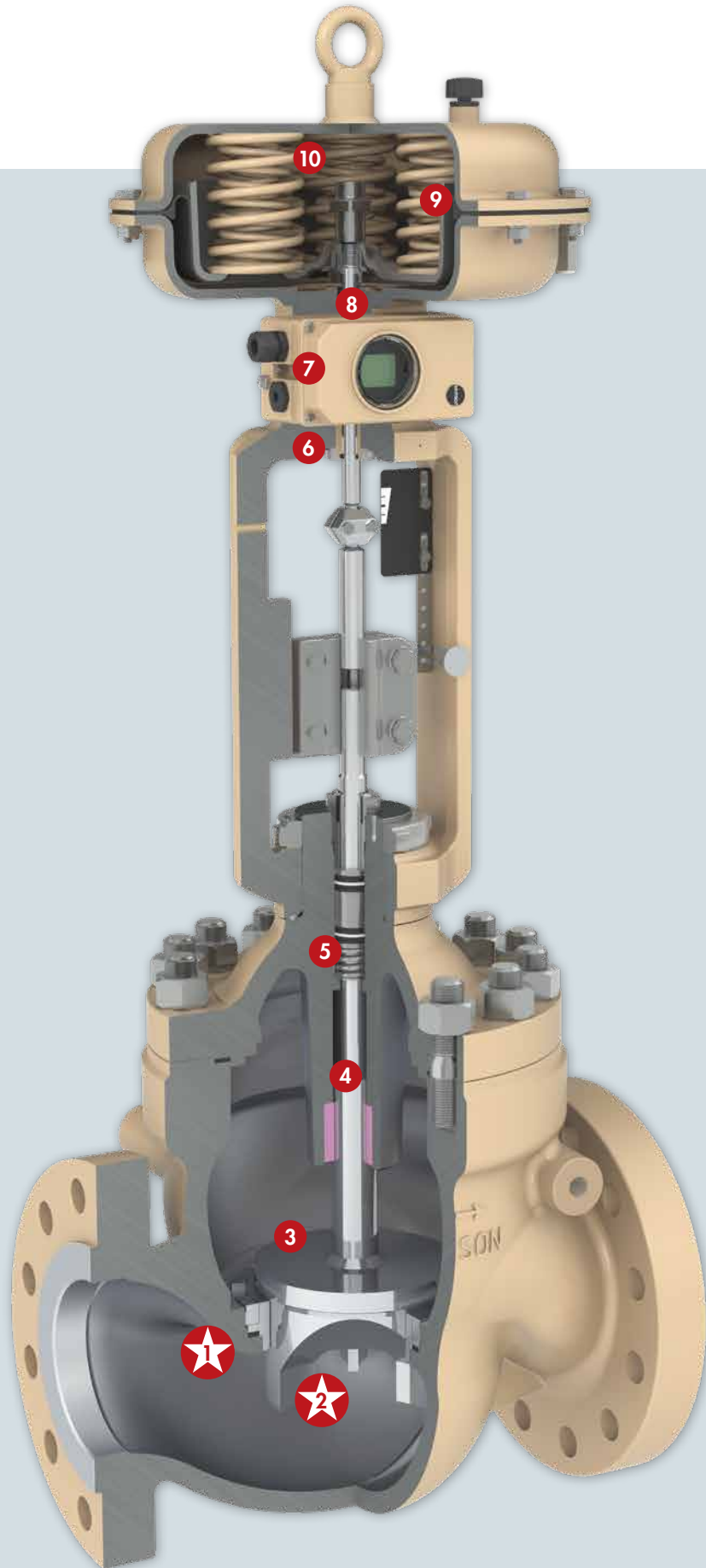
### 9 Rolling Diaphragm Design

- Greatly reduces diaphragm wear compared to stretching diaphragm design used by competitors
- Diaphragm design results in very small external air loss

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### 10 Field Reversible Nested Multi-Spring Actuator

- Reduced height and weight
- Easily convert between fail actions in the field with minimal effort



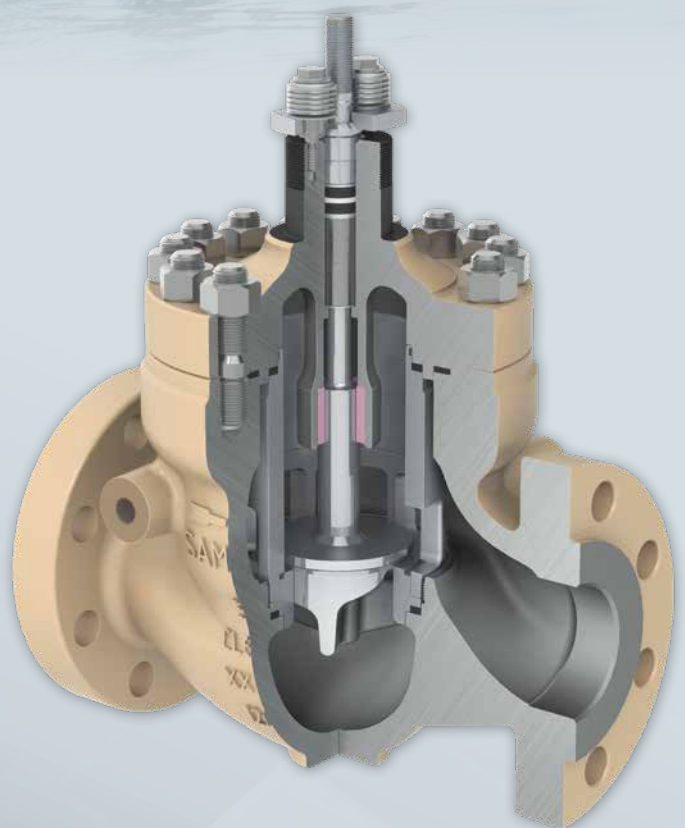
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## *Modular Design*

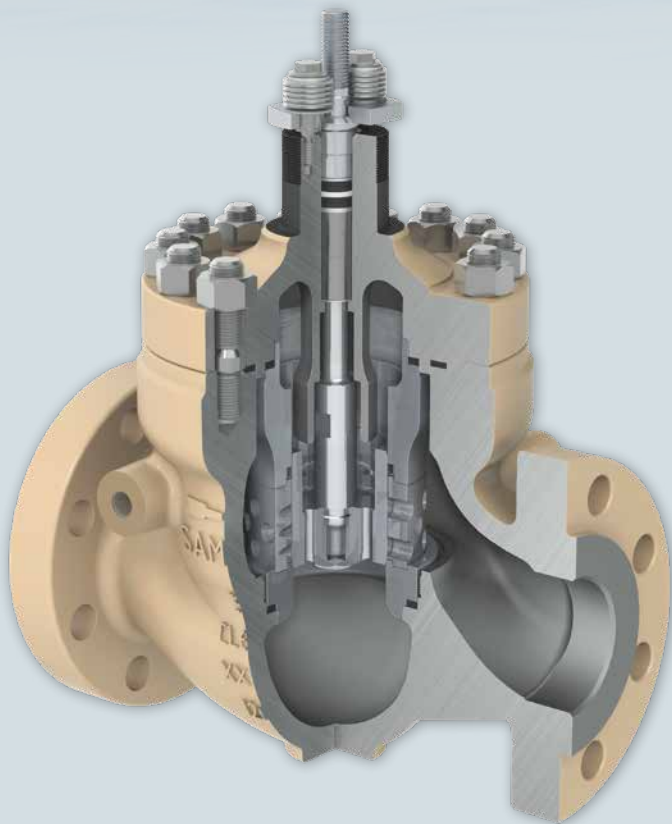
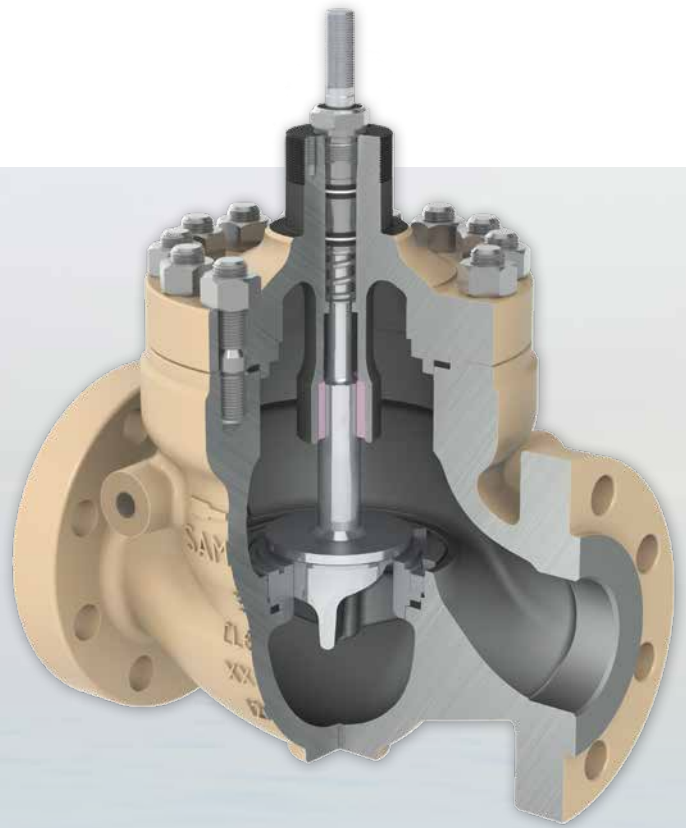


The 3251-E valve is designed to work as all three common types of globe valve design with all the same core components, including the valve body. This means that even after the valve is installed, it can be converted from a stem guided valve to a cage guided valve. Processes in a plant, and process conditions seen by a control valve, can often change dramatically over time. Having a valve capable of adapting to those varying conditions without requiring complete replacement can lead to a significant reduction in total cost of ownership.

Stem guided valves are used for most standard applications as they achieve a relatively large Cv value and simpler design with fewer overall components than a comparable cage guided valve. The use of a V-port or perforated style plug allows for a second guiding surface between the seat and plug of the valve to better stabilize the plug under most flow conditions. The free flow path of the valve also makes it impervious to (no erosive) particulates.



Stem guided valves are commonly used in combination with a threaded ring to retain the seat in place. This design minimizes the number of required spare parts, making servicing the valve very simple and further reduces the total cost of ownership of the valve by reducing the number of spare parts required. This design also allows it to achieve its maximum Cv value by providing a completely unobstructed flow path.



Cage guided valves are robust designs that are built for more challenging applications.

The cage guiding holds the piston perfectly stable even under extremely high differential pressure and vibration. The cage can be designed for various types of noise attenuation or cavitation mitigation

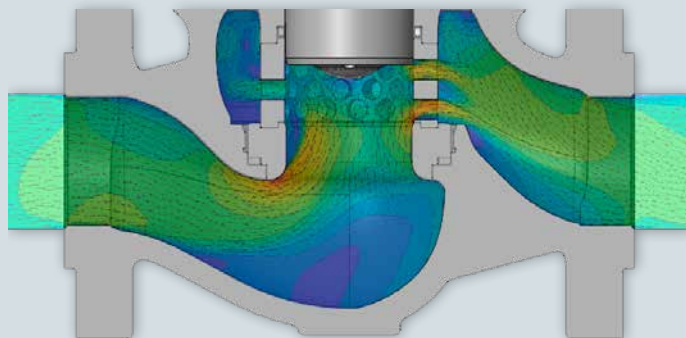
- Balancing
- Cv for On/Off

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## *Design Enhancements*

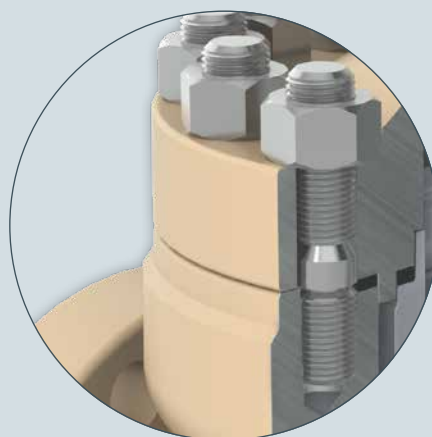
### **CFD Optimized Flow Path**

The flow path of the 3251-E is optimized through CFD analysis to achieve the ideal fluid flow path and largest possible Cv values for a globe-style control valve. Each nominal size has at least a 10 % increase in Cv value compared with existing SAMSON globe control valves.



### **Optimized Edges for Special Coatings**

Body and bonnet edges comply with the ISO 12944 with a minimum radius of 2 mm. This improves the paint coating adhesion in the transition area of planes perpendicular to one another as well as the lifetime of the coating. Additionally, the reduced gap between body and bonnet ensures that all painted surfaces are accessible.



### **Robust Guiding**

The diameter of the lower portion of the plug stem that serves as the guiding area has been substantially increased. This provides for more stability and vibration resistance, leading to an overall longer service life. Additionally, this functions as an anti-blowout measure.





### Ideal Packing for Every Application

The 3251-E is available with either internal spring-loaded packing (Standard on other SAMSON valve types) or bolted packing with external live-loading. The bolted packing design (on the right) offers certified low emissions acc. ISO 15848-1, category BH CC2. The internal spring-loaded packing is also suitable for minimal external leakage and is easier for service and maintenance because the packing cannot be incorrectly tightened. Both packing designs are interchangeable without changes to the bonnet.



### Simplified Handling

UNC-threaded holes for lifting lugs are pre-tapped into each valve body to simplify lifting during transportation, installation, and handling.



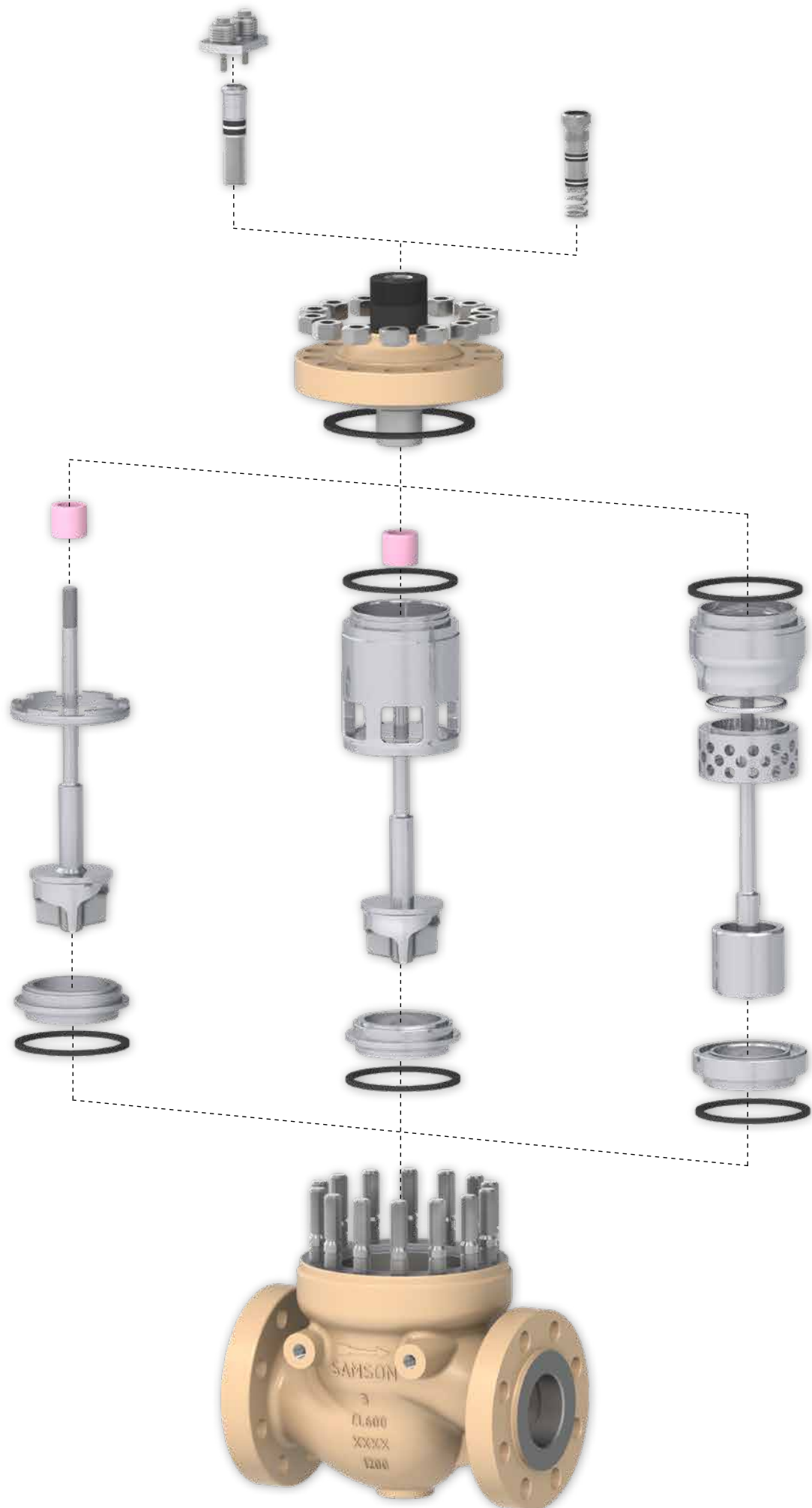
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## Technical Details



<b>Valve Size</b>	NPS 3 to 8
<b>Pressure Rating</b>	ANSI Class 600
<b>End Connections</b>	Flanged: RF or RTJ acc. ANSI/ASME B16.5
<b>Materials</b>	Carbon Steel: A216 WCC Stainless Steel: A351 CF8M
<b>Temperature Range</b>	14 to +662°F (-10 to +350°C)
<b>Internal Leakage</b>	Class IV or V acc. to ANSI/FCI 70-2 and IEC 60534-4
<b>Packing</b>	Bolted Live-Loaded Low Emission Packing (Standard) Internal Spring-Loaded Packing





# MAXIMUM MODULARITY

## Core Industries



### Oil & Gas

Hydrocarbons are energy-dense natural resources that have come to define how we power our modern society. Everything from natural gas for combined-cycle power plants to air travel to your favorite destination, these resources are the foundation for these fuels. The responsible production, treatment, and transportation of these resources presents many challenges for equipment manufacturers. SAMSON's vast experience in this industry lead to the development of the 3251-E that is equipped to handle these various challenges with paramount importance on safety and environmental responsibility. Additional design considerations centered around unique industry requirements such as live-loaded bolted packing, increased wall thickness corrosion allowance, and rounded edges according to ISO 12944 for perpendicular surfaces to allow for optimal paint adhesion.

### Refining

The refinement of raw hydrocarbons into usable fuels is a sophisticated and dynamic field of applications. Many challenging processes and every changing standard and regulations on fuel content continue to make this a long-standing industry an every-changing one. SAMSON continues to stay at the forefront of these requirements and work closely with our customers continue to develop special solutions for every application.



### **Chemical and Petrochemical**

The chemical and petrochemical industries produce many of the vital products that fundamentally define life as we know it. SAMSON's experience in these industries can be traced back to the foundation of the company itself. Valves in these important industries will see a multitude of processes and applications. The 3251-E enhances the SAMSON portfolio to be able to handle these requirements with an identical body for interchangeable trim designs, including maximum flow capacity, quick change or highly vibration resistant cage guiding.

### **Power Generation**

The generation of electric power is a fundamental part of modern civilization. Demand continues to increase as a result of the heavy reliance we have on electricity in our daily lives, and the world's ongoing industrialization and urban development. The 3251-E has been uniquely designed to fit the many challenging applications seen by control valves in several different methods of power generation, including specialized trim designs like the Flow Divider and LDB Cage for noise attenuation in steam control applications.

# SAMSON AT A GLANCE



## STAFF

- Worldwide 4,500
- Europe 3,700
- Asia 600
- Americas 200
- Frankfurt am Main, Germany 2,000

## INDUSTRIES AND APPLICATIONS

- Chemicals and petrochemicals
- Food and beverages
- Pharmaceuticals and biotechnology
- Oil and gas
- Liquefied Natural Gas (LNG)
- Marine equipment
- Power and energy
- Industrial gases
- Cryogenic applications
- District energy and building automation
- Metallurgy and mining
- Pulp and paper
- Water technology
- Other industries

## PRODUCTS

- Valves
- Self-operated regulators
- Actuators
- Positioners and 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 in 1916  
Total plot and production area: 150,000 m<sup>2</sup>
- SAMSON France, Lyon, established in 1962  
Total plot and production area: 23,400 m<sup>2</sup>
- SAMSON Turkey, Istanbul established in 1984  
Total plot and production area: 11,053 m<sup>2</sup>
- SAMSON USA, Baytown, TX, established in 1992  
Total plot and production area: 9,200 m<sup>2</sup>
- SAMSON China, Beijing, established in 1998  
Total plot and production area: 10,138 m<sup>2</sup>
- SAMSON India, Pune district, established in 1999  
Total plot and production area: 18,000 m<sup>2</sup>
- SAMSON Russia, Rostov-on-Don, established in 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 VDH PRODUCTS, the Netherlands
- SAMSON VETEC, Speyer, Germany  
Total plot and production area: 27,090 m<sup>2</sup>

## SAMSON AKTIENGESELLSCHAFT

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