



Expertise – Passion – Automation



**Clean and hygienic design  
SMC products**

We have the complete system  
for increased safety in food production!

# Clean and hygienic design products

*A brief introduction to our complete system.*

Any contamination introduced during food production can severely impact food quality and can lead to expensive product recalls and potential brand damage. Impeccable hygiene during food production is therefore the number one priority for any food manufacturing site. This applies especially to the cleaning of machinery and components used in food production, where non-stop operation is commonplace and machine availability is paramount. As a result, components with a clean and hygienic design play a critical role in compliance with hygiene standards enabling effective, soil free cleaning in service.

Clean and hygienic design considers the materials of construction, geometry and surface finish of the components. For example, surfaces in contact with the product must be very smooth in order to avoid microscopic niches where pathogens could grow and then result in possible bacterial contamination. External angles should also have a specific inclination to prevent liquid pooling.

SMC's clean and hygienic products meet many of these requirements demanded by the sector.

## Expert experience



### **A question for our food technologist at SMC: What is the difference between clean design and hygienic design?**

“Clean design describes a design that is geared towards simple, quick and residue-free cleaning, but which is not one hundred per cent EHEDG-compliant. Hygienic Design fully complies with the guidelines of the European Hygienic Engineering & Design Group, in other words EHEDG. This means that the component is one hundred per cent hygienic in terms of its design and cleanability.”

**Torsten Klein**, Strategic Market Manager Food

### **Premium products for the toughest applications**

With our range of clean and hygienic design products, we offer you superior quality components for use in the most challenging washdown environments. Furthermore, for the exterior of our cylinders, tubing and fittings, we only use materials that are both FDA (Food and Drug Administration) EU 1935/2004 compliant.

### **The benefit for you: fast and efficient cleaning**

The use of such components helps to achieve both safe food production and compliance with regulatory standards. It also offers operational benefits such as reduced cleaning times and simplified processes, resulting in the reduction of cleaning agents, work hours and machine downtime.

### **Hygienic design from inception**

Taking a proactive approach to the hygienic and clean design of your next process line will result in a lower Total Cost of Ownership of your line, increasing your machine availability and reducing the amount of resources required to clean your line ready for the next production run.

### **The benefits for you:**

- ▶ Minimising risks (contamination, product recall)
- ▶ Fast, efficient, easy cleaning
- ▶ Saving on resources and cleaning agents

## Hygienic design fitting

### KFG2H-E Series

This series complies with the EHEDG directive. Hygienic design prevents the ingress and settling of fluids and foreign bodies. The fittings are very quick and easy to clean and can also be used in open processes.

- ▶ Hygienic design, EHEDG certified
- ▶ FDA and EU1935/2004 compliant
- ▶ IP69K
- ▶ Straight thread for hygienic mounting on suitable cylinders



## Excellent!

SMC offers you the world's first and, to date, only EHEDG-certified pneumatic fitting: **KFG2H-E**.

### EHEDG design standards

- External surface roughness: Ra 0.8 µm or less
- Corners with a radius of 3 mm or more or with an internal angle of 135°
- Stainless material with high corrosion protection: 316 stainless steel
- No direct contact with external metal parts
- Seals made from FDA and EU1935/2004 compliant rubber materials.



## Technical Specifications

Fluid	Fitting
Compliance	EHEDG and FDA compliant
Protection type	IP69K
Material	Stainless steel 316
Hygienic design	Gap-free and smooth surfaces
Seals	FKM, FDA compliant, blue and detectable

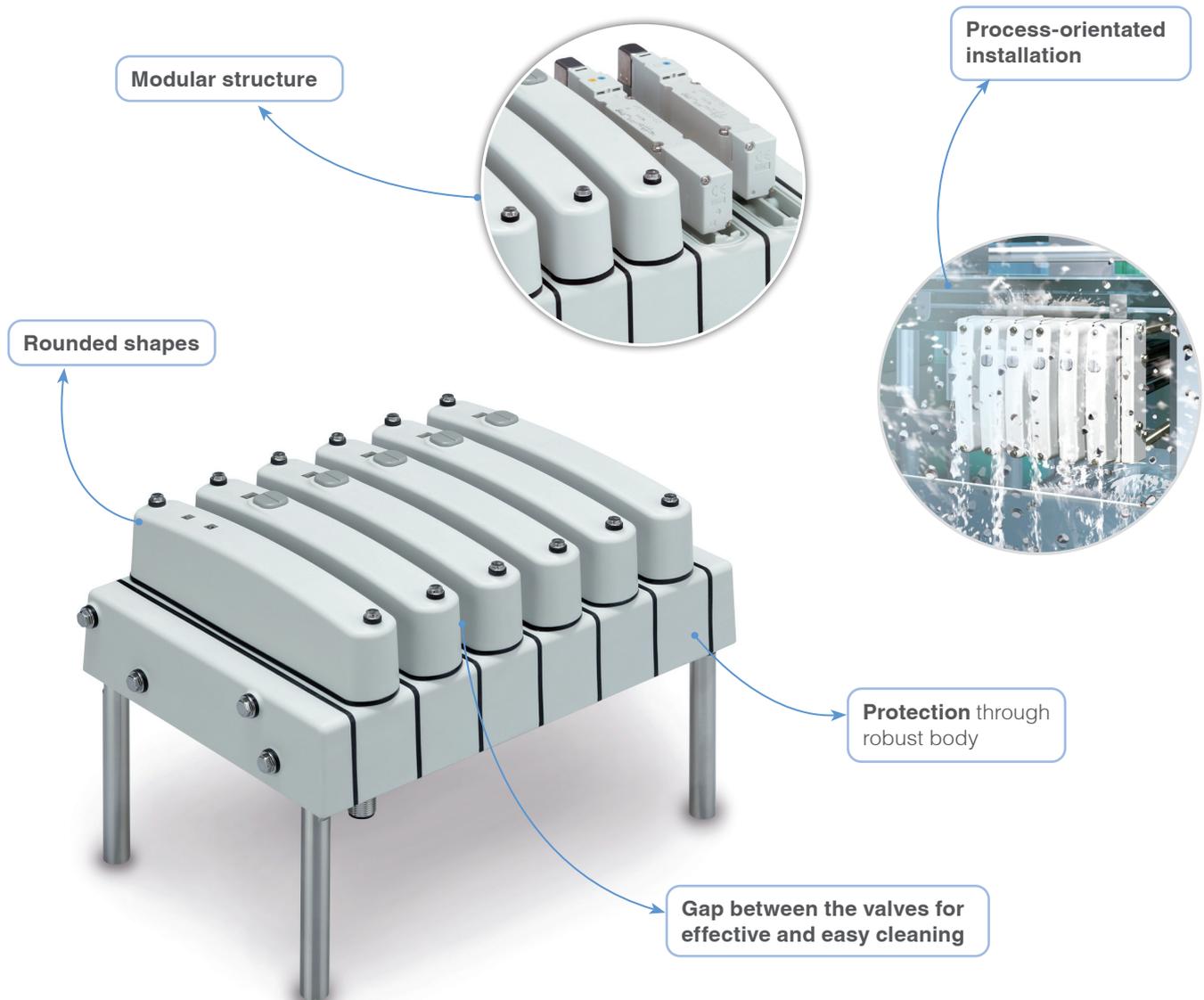
# Clean design manifold valve

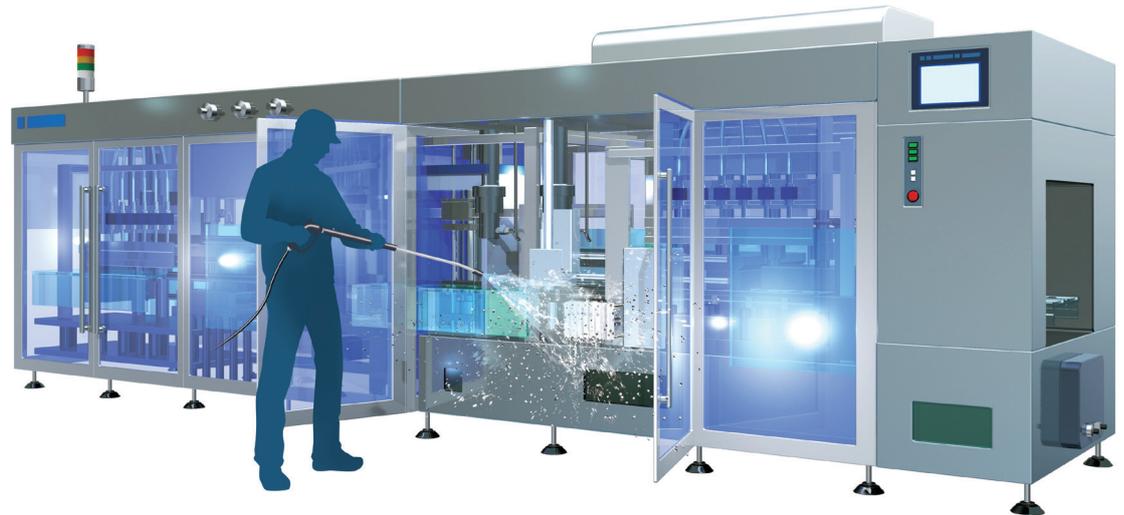
## JSY5000-H Series

The clean design JSY5000-H series with its geometric design without recesses and edges enables quick and effective cleaning. The series fulfils protection class IP69K and can therefore also be used safely where high-pressure cleaning is required!

Thanks to the modular design, valves can be changed very quickly and easily, or the valve terminal can be supplemented and extended.

- ▶ Protection class IP69K
- ▶ FDA-compliant external resin parts
- ▶ No indentations and low liquid accumulation for clean cleaning
- ▶ High flow rate: up to 1600 l/min for single and multiple manifold
- ▶ Metal parts made of 316 stainless steel with high corrosion resistance
- ▶ Quick and easy valve replacement





## Technical specifications

Valve type		Rubber seal
Fluid		Air
Internal pilot operating pressure range [MPa]	2-position single	0.15 to 0.7
	2-position double	0.1 to 0.7
	3-position	0.2 to 0.7
	Dual 3-port valve	0.15 to 0.7
External pilot operating pressure range [MPa] (Made to order)	Operating pressure range	
	Pilot pressure range	2-position single
		2-position double
3-position		
Ambient and fluid temperatures <sup>1)</sup> [°C]		-10 to 50 (No freezing)
Max. operating frequency [HZ]	JSY5000	2-position single/double
		Dual 3-port valve
		3-position
Manual override		Non-locking type
Pilot exhaust type	Internal pilot	Common exhaust
	External pilot (Made to order)	
Lubrication		Not required
Mounting position <sup>2)</sup>		Unrestricted
Impact/vibration resistance <sup>2)</sup> [m/s <sup>2</sup> ]		150/30
Coil rated voltage [DC]		24 V
Allowable voltage fluctuation [V]		±10 % of the rated voltage
Power consumption [W]	Standard	0.4
	With energy-saving circuit (Made to order)	0.1 [Inrush 0.4 / holding 0.1]
Surge voltage suppressor		Diode (Varistor for non-polar type)
Indicator light		LED

1) The product is IP69K-compliant (protected against high-pressure hot water). However, operation of the valve must be within the specified valve ambient temperature and fluid temperature range.

2) Impact resistance: No malfunction occurred when tested in the axial direction and at a right angle to the main valve and armature in both an energised and a de-energised state, once in each condition.

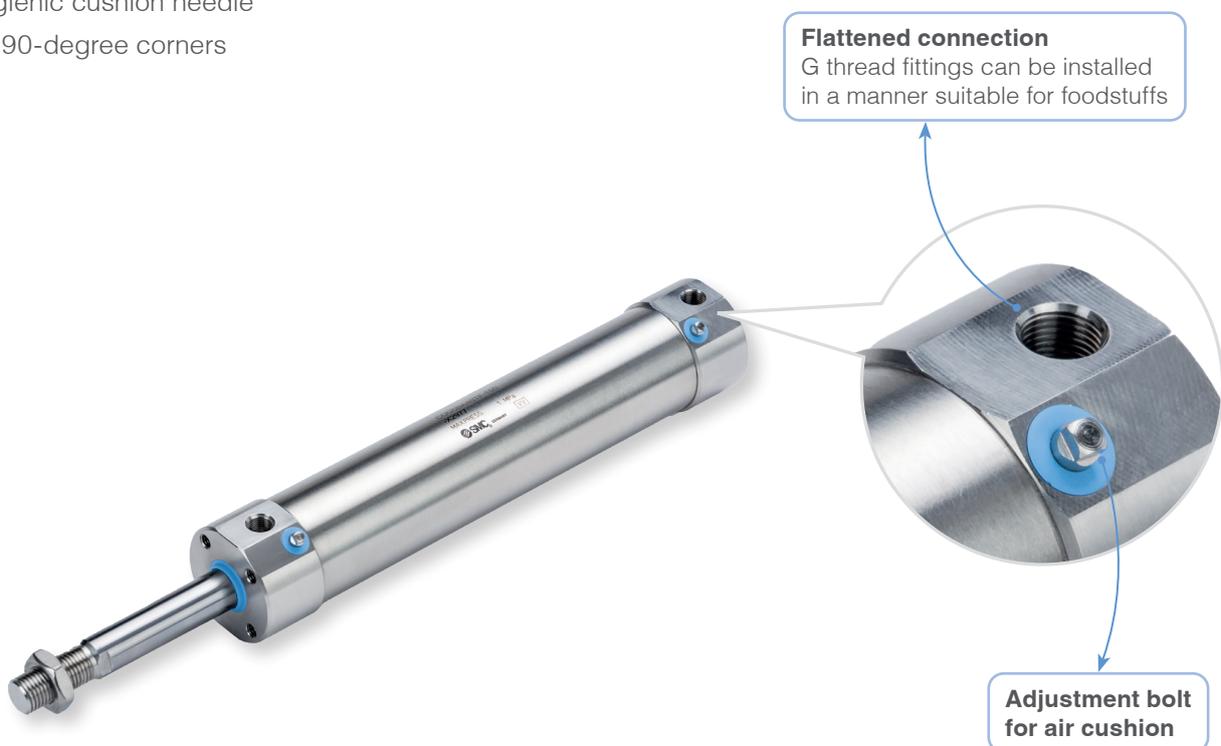
Vibration resistance: The value at which no malfunction occurs in a one-sweep test between 45 and 2000 Hz, performed in both energised and de-energised states in the axial direction and at right angles to the main valve and the armature (Values from the initial stage).

## Clean design stainless steel cylinder

### CG5-X2977 Series

These cylinders are designed for use in wet areas of the food or pharmaceutical industry. The smooth surface and geometric design without corners and edges make them very easy to clean: the cylinders have a hygienic cushion needle, the transition between head and tube is 135 degrees and is screwed on using external square-head screws. The special blue wiper prevents the ingress of water or germs.

- ▶ Material: DIN 1672-2, stainless steel for food products
- ▶ Laser marking instead of product label
- ▶ Flattened connection for hygienic mounting of a fitting with a straight thread
- ▶ Blue easy-to-clean special wiper FDA and EU 1935/2004 compliant
- ▶ H1 grease
- ▶ Hygienic cushion needle
- ▶ No 90-degree corners



## Technical Specifications

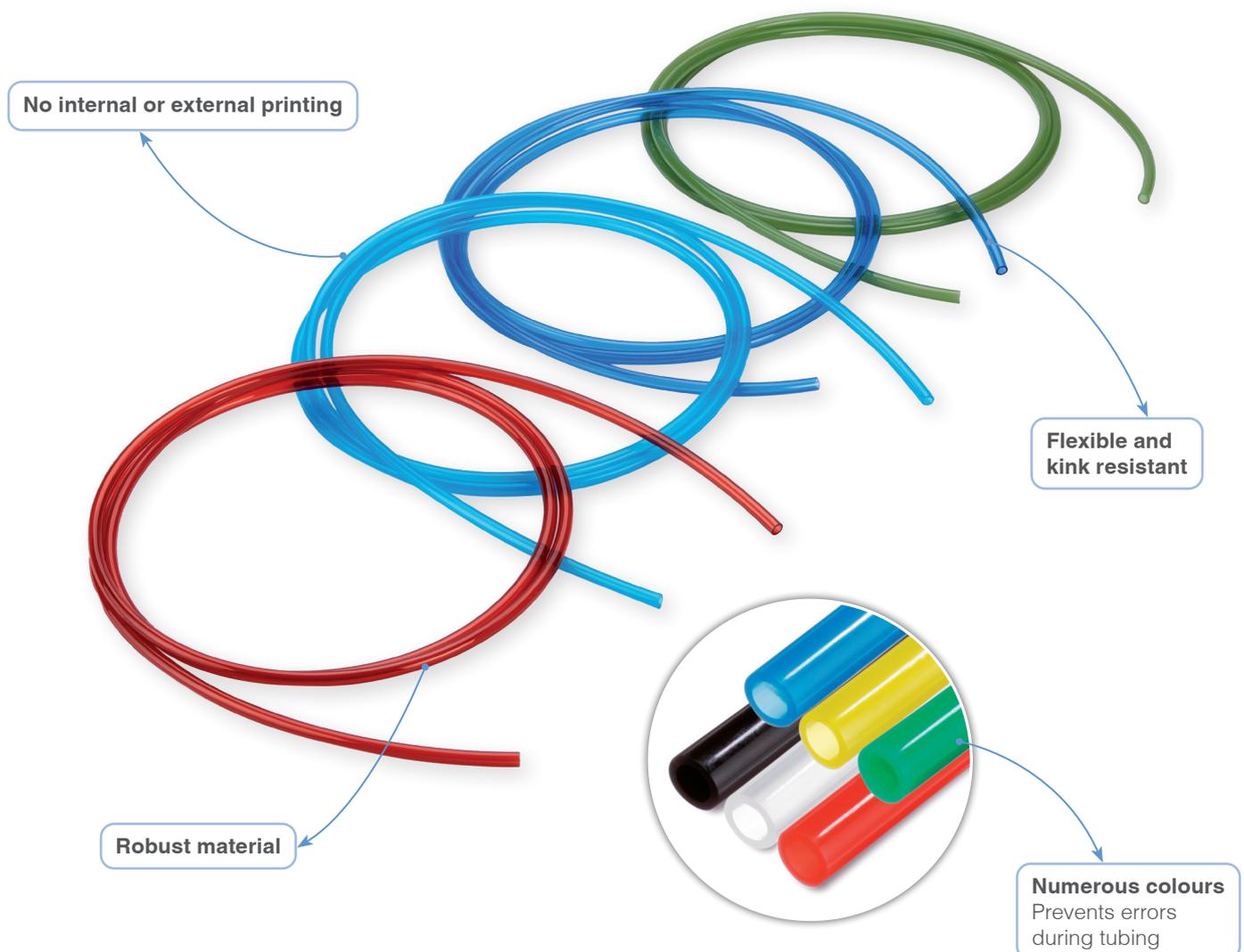
<b>Bore size</b>	Ø 20, Ø 25, Ø 32, Ø 40, Ø 50, Ø 63
<b>Stroke Ø 20; Ø 25</b> <b>Stroke Ø 32 - Ø 63</b>	Up to 300 mm Up to 500 mm
<b>Action</b>	Double acting
<b>Fluid</b>	Air
<b>Max. operating pressure</b>	1.0 MPa
<b>Min. operating pressure</b>	0.05 MPa
<b>Ambient and fluid temperatures</b>	-10 °C to +60 °C (No freezing)
<b>Lubrication</b>	Not required (lubricated for life)
<b>Piston speed</b>	50 - 500 mm/s
<b>Stroke tolerance</b>	+1.0/-0 mm
<b>Cushion Ø 20 - Ø 40</b>	Rubber bumper
<b>Cushion Ø 32 - Ø 63</b>	Air cushion with additional rubber bumper
<b>With magnet</b>	Yes

## Clean design tube

### TU-X214 Series

The air tubing in this series is characterised by its robust, durable quality. Made of polyurethane, they are resistant to cleaning and chemicals and can be used in the food, medical and pharmaceutical industries thanks to their FDA conformity.

- ▶ Food compatible
- ▶ Complies with FDA and (EU) No. 10/2011
- ▶ Available tubing outer diameter: Ø 4 to Ø 12 mm
- ▶ Eight colour variants



## Technical specifications

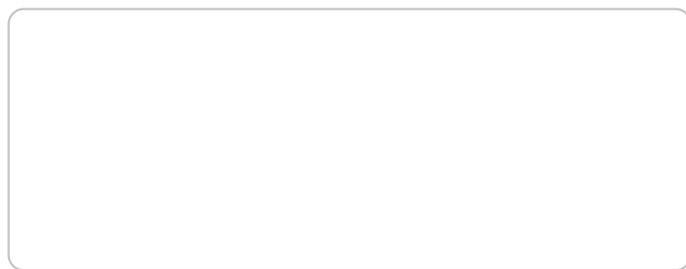
<b>Material</b>	Polyurethane
<b>Compliance</b>	FDA and (EU) No. 10/2011
<b>Colours</b>	Black, white, red, blue, yellow, green, colourless and orange
<b>Sizes</b>	(Outer Ø/mm): 4, 6, 8, 10 and 12



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