

Tubing/fitting combinations

FESTO



Well combined: tubing/fitting combinations for all applications!

Precise selection of the right tubing/fitting combination is above all dependent on the application. Applications often have a single feature that quickly defines the right selection.

The overview below of our most popular tubing/fitting combinations will help you to make the right choice quickly and reliably. Standard colours for tubing are shown in the table to the right, and additional colours are available in the modular system.

Tubing

Designation	Polyurethane (PU)					Polyethylene (PE)		Polyamide (PA)				PFA**
	PUN/PUN-DUO	PUN-H/PUN-H-DUO	PUN-CM	PUN-VO	PUN-VO-C	PEN	PLN	PAN	PAN-R	PAN-VO	PAN-MF	PFAN
Operating medium	Compressed air, vacuum	Compressed air, vacuum, water*	Compressed air, vacuum	Compressed air, vacuum, water*	Compressed air, vacuum, water*	Compressed air, vacuum, water*	Compressed air, vacuum, water*	Compressed air, vacuum	Compressed air, vacuum	Compressed air, vacuum, water*	Compressed air, vacuum	Compressed air, vacuum, water*
Temperature [°C]	-35 ... +60	-35 ... +60	-35 ... +60	-35 ... +60	-35 ... +60	-30 ... +60	-30 ... +80	-30 ... +80	-30 ... +80	-30 ... +90	-60 ... +100	-20 ... +150
Temperature-dependent operating pressure [bar]	-0.95 ... +10	-0.95 ... +10	-0.95 ... +10	-0.95 ... +10	-0.95 ... +10	-0.95 ... +10	-0.95 ... +14	-0.95 ... +19	-0.95 ... +35	-0.95 ... +12	-0.95 ... +31	-0.95 ... +16
Resistant to chemicals	-	+	+	+	+	++	++	+	+	+	+	+++
Suitable for the food industry	-	+++ FDA	-	-	-	-	+++ VO (EU) Nr.10/2011	-	-	-	-	+++ FDA
Hydrolysis resistant	+	++	++	++	++	+++	+++	++	++	++	++	+++
Fire test	-	-	-	UL 94 DIN 5510-2	UL 94 DIN 5510-2	-	-	-	-	UL 94	-	UL 94
Halogen-free	+++	+++	+++	+++	+++	+++	+++	+++	+++	-	+++	-
Flexibility	+++	+++	++	++	++	++	+	++	+	++	+	+
Special feature	Wide choice of variants	Hydrolysis resistant	Anti-static	Flame retardant	Resistant to welding spatter	Suitable for use with energy chains	Weather resistant	High load bearing capacity	Suitable for pressure up to 35 bar	Resistant to welding spatter	DIN 73378 KFZ approval	Highly resistant to chemicals

Fittings

Designation	Plastic				Metal			
	NPKA	NPQP	QS(M)	QS-VO	NPQM	NPQH	NPCK	CRQS
Operating medium	Compressed air, vacuum, water*	Compressed air, vacuum	Compressed air, vacuum, water*	Compressed air, vacuum, water*	Compressed air, vacuum, water*	Compressed air, vacuum, water*	Compressed air, vacuum, water*	Compressed air, vacuum, water*
Temperature [°C]	-10 ... +60	-20 ... +60	-10 ... +80	0 ... +60	-20 ... +70	0 ... +150	-20 ... +120	-15 ... +120
Temperature-dependent operating pressure [bar]	-0.95 ... +10	-0.95 ... +10	-0.95 ... +14	-0.95 ... +10	-0.95 ... +16	-0.95 ... +20	-0.95 ... +12	-0.95 ... +10
Housing material	POM and PA66	PP	PBT and nickel-plated brass	PBT	Nickel-plated brass	Nickel-plated brass	Stainless steel	Stainless steel
Thread	G thread	R thread	M, G and R thread	G and R thread	M and G thread	M and G thread	M and G thread	M and R thread
Resistant to chemicals	++	+++	+	+	+	++	+++	+++
Suitable for the food industry	+++ FDA	+++ FDA	-	-	-	+++ FDA	+++ FDA	+++
Corrosion resistance class CRC	4	4	1	1	1	3	4	4
Special features	Cleanroom compatible, 100% Polymer	FDA compliant internal and external parts	Wide choice of variants	Resistant to welding spatter	Robust	Resistant to high temperatures	Clean Design	Highly resistant to corrosion

* Other media upon request

** Perfluoralkoxyalkan

Our recommendations:
tubing/fitting combinations at a glance

Standard

PEN 	QS 	60 °C -10 °C	10 bar	Suitable for a wide range of tasks and attractively priced. Flexible and resistant tube, easy to install thanks to optimised bending radii. High level of abrasion resistance in dynamic applications.
PUN 	QS 	60 °C -10 °C	10 bar	Maximum flexibility in standard applications thanks to an extremely wide range of options for combining the different types.
PAN 	QS 	80 °C -10 °C	14 bar	Meets all requirements, even for standard applications with increased pressure and temperature ranges.

High pressures

PAN-MF 	NPQM 	70 °C -20 °C	16 bar	Meets DIN standard 73378: ideal for use in mobile pneumatics. Suitable for increased temperature ranges combined with high pressure ranges.
PAN-R 	NPQH 	80 °C 0 °C	20 bar	Powerful in pressure ranges up to 20 bar, for example in applications with the pressure booster DPA.

Resistant to chemicals, suitable for the food industry and hydrolysis resistant

PLN 	NPQP 	60 °C -20 °C	10 bar	Resistant to cleaning agents, FDA compliant and economical. Can be used instead of the combination with stainless steel fittings.
PUN-H 	NPKA 	60 °C -10 °C	10 bar	Hydrolysis resistant and suitable for water applications. Combination suitable for use in clean rooms, FDA compliant and non-corrosive due to 100% polymer. Very easy to install thanks to the "one click principle".
PFAN 	NPQH 	150 °C 0 °C	16 bar	For high temperatures up to 150°C. Suitable for the food industry, FDA compliant and resistant to cleaning agents.
PFAN 	NPCK 	120 °C -20 °C	12 bar	Easy to clean thanks to the union nut's edge-free design. Maximum resistance to corrosion (CRC 4) and FDA compliant. Suitable for a wide range of media.
PFAN 	CRQS 	120 °C -15 °C	10 bar	Maximum resistance to corrosion (CRC 4) and aggressive acids and lyes.

Anti-static

PUN-CM 	NPQM 	60 °C -20 °C	10 bar	Anti-static tube plus solid metal fitting: maximum protection for electrical and electronic components.
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Flame-retardant

PUN-VO 	NPQM 	60 °C -20 °C	10 bar	Its flame-retardant properties provide a high level of safety in areas where there is a risk of fire. The tube has been tested to DIN 5510-2.
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Resistant to welding spatter

PUN-VO-C 	NPQH 	60 °C 0 °C	10 bar	Ideal for applications involving welding spatter. Reliable thanks to a tubing wall thickness of 2 mm for all diameters.
PAN-VO 	QS-VO 	60 °C 0 °C	10 bar	Safe even in the immediate vicinity of welding spatter thanks to the double-walled tubing with special fitting.

Standard



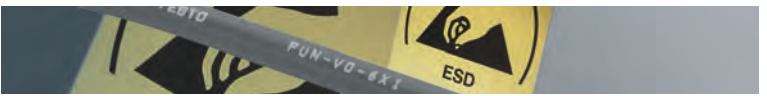
High pressures



Resistant to chemicals, suitable for the food industry and hydrolysisresistant



Anti-static



Flame-retardant



Resistant to welding spatter



Everything from a single source – for the ideal combination

Faster and easier: the product finders and the modular tubing system

How do I find the right tubing for my applications?

And which fittings match the tubing?

It's easy with Festo's integrated product finders in the electronic catalogue. We ask you all the questions necessary so you can make the right selection.

Here's how it works:

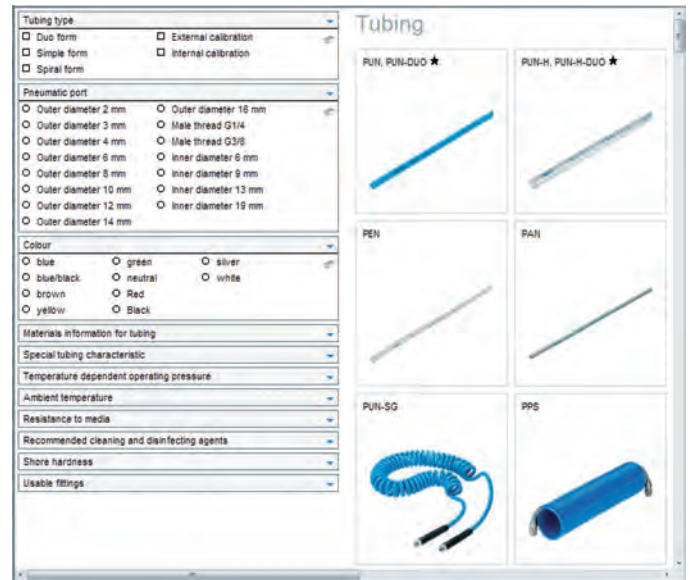
Start the product finder in the electronic catalogue. Select your technical features, step-by-step, on the left-hand side. A choice of suitable products that match those features will then automatically be displayed on the right-hand side. Plausibility checks assure that only correct configurations are accepted.

Or:

Get started straightaway via the following links:

→ www.festo.com/productfinder/tubing

→ www.festo.com/productfinder/fittings



Even more individual: the modular tubing system.

Lots of colours, individualised printing and labelling, lengths and package quantities as required.

At a glance: one-way flow control valves and installation accessories



GRLA-(RS)B



GRLA-(RS)D



GRLA-RS-B



VFOF



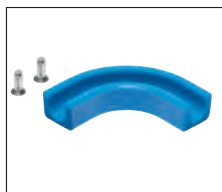
CRGRLA



VFOH



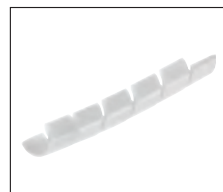
Sealing ring
assortment



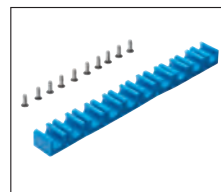
Tubing support
PKS



Tubing support
NPAW



Spiral wrap for tubing
PKB



Multi-tube holder
KK



Pipe and tubing cutter
ZRS