

FESTO

The Guide to Pneumatic Installations



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Guide to
Pneumatic Installations

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Key

★	Products with the star: easy to select and quickly delivered
Blue type code on the product pages, e.g. PUN	For searching online → www.festo.com/catalogue/pun
D1	Pneumatic connection 1 or O.D.
D2	Pneumatic connection 2 or O.D.
D3	Pneumatic connection 3
D21	Auxiliary pilot air connection
Di, di	I.D.
CRC4	Corrosion resistance class CRC 4 in accordance with Festo standard FN 940070. Particularly high corrosion stress. Outdoor exposure under extreme corrosive conditions. Parts exposed to aggressive media, e.g. in the food or chemical industry. These applications may need to be supported with special tests (→ also FN 940082) using appropriate media.
LpA	Noise level
n	No. of inputs/outputs
NW	Nominal size
PE	Packaging unit in pieces or metres
q	Flow rate with respect to atmosphere
qn	Standard nominal flow rate
qnN	The standard nominal flow rate qnN is the volumetric flow rate based on standard conditions at an operating pressure of $p_1 = 0.6 \text{ MPa}$ and an output pressure of $p_2 = 0.5 \text{ MPa}$, measured at room temperature $t = 20 \text{ °C}$
TNR	Part no.

Product finder:

Just go online!

A specific link and QR code will guide you to the right page.

Enter your application-specific requirements and let our system guide you quickly and reliably to an appropriate solution. This makes searching extremely convenient!

→ www.festo.com/catalogue/...





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The right installation materials for every application – system solutions from Festo

“Everything from a single source!” – the variety of our installation portfolio enables us to provide the right solution for a huge and diverse range of industrial requirements.

The Guide to Pneumatic Installations from Festo will help you to select the right combination of fittings and connectors, non-return, pressure control and flow control valves and tubing options.

For convenient selection and increased productivity!





Quick ordering of selected basic designs

Wherever you see this symbol in our printed or electronic catalogue, it indicates the product has been specifically selected and is perfect for use in the majority of automation applications.

The stars will help you to find what you are looking for more quickly and place orders more easily.

These star products are in stock and can usually be shipped immediately.

At a glance:

- + Quickest delivery, worldwide – wherever, whenever
- + Best value
- + Easy and fast to select

Just look for the star!

Always the faster route to the right solution

It couldn't be easier:

Select the product group you require from the Table of contents

→ 1

Example: push-in fittings for O.D. tubing

→ 78

Use the specifications on the product pages to find the products you want.

★ Quick ordering of selected basic designs

We make it easy for you!

We have put together a globally uniform Core Range for you that not only makes selection quicker and easier, it also offers fast delivery. It has been selected by Festo experts based on actual customer requirements and covers the majority of automation applications, while also offering excellent value for money.

Products with the star: easy to select and quickly delivered

You can recognise these outstanding products at a glance as they are marked in the catalogues with a ★ star.

Quick and easy to order

These products are preconfigured to ensure excellent value for money, and are quick and easy to order using the part number.

Outstanding availability

They are in stock and generally ready to be shipped immediately, and are therefore available in no time at all.



You can benefit from these advantages whenever you need core pneumatic and electrical functions.

Wherever you see this symbol in our printed or electronic catalogue, it indicates the product has been specifically selected and is perfect for use in the majority of automation applications. The stars will help you to find what you are looking for more quickly and place orders more easily. These star products are in stock and can usually be shipped immediately.

Round-the-clock benefits

**24h
online**

Fast and convenient

Get a quick and easy overview of prices and delivery times in the basket at any time, including shipment tracking and order documentation.

Use our Online Shop.



Request quotes

- + Quickly create quotes for your purchasing department
- + View the quote by e-mail and in your user account shortly afterwards.



Order tracking

- + Planning reliability: all delivery dates in the basket at a glance
- + Track orders and view the delivery status, even for orders outside of the Online Shop
- + Track shipments



No small quantity surcharge for online orders

- + Reduces your costs
- + Gives you greater flexibility when ordering



Download complete documentation

- + Download all documents for the selected products with just a few clicks

You can find the Festo Online Shop at → www.festo.com – click on **Basket**

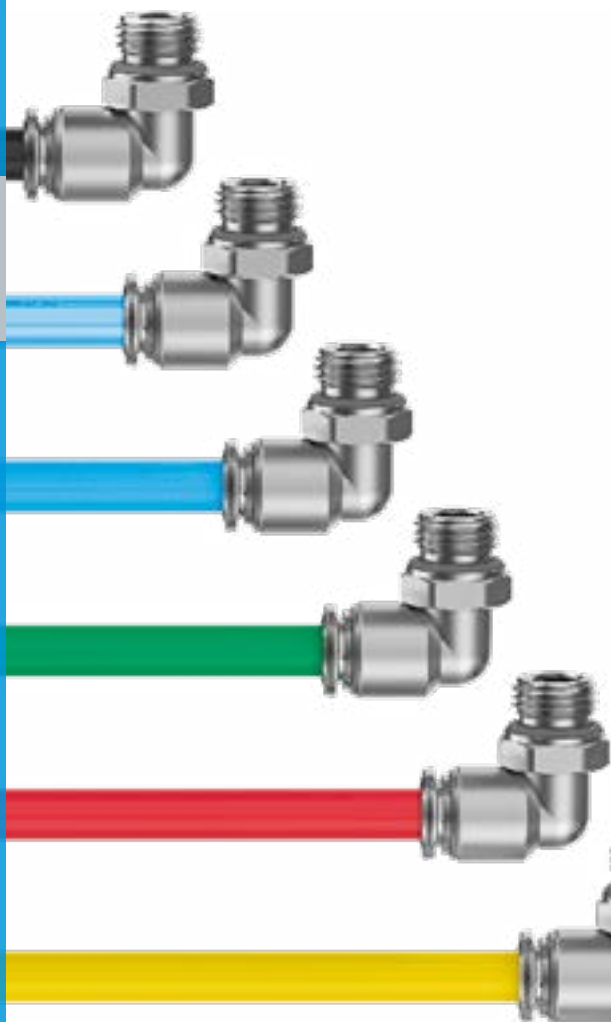
At a glance:

- + Quickest delivery, worldwide – wherever, whenever
- + Best value
- + Easy and fast to select

Overview

01

Tubing/fitting combinations – Overview



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Tubing-fitting combinations for all applications

While many of our competitors focus on tubing or on fittings, the Festo range is characterised by our trademark system solution approach.

In recent years, both tubing and fittings have been consistently further improved and considerably effort has gone into making sure that application-specific tubing/fitting combinations are optimally harmonised.

The precise selection of the right tubing/fitting combination is above all dependent on the application.

Each individual case is characterised by a number of different requirements for the specific tubing/fitting combination.

Applications often have a single feature that quickly guides you to the right selection.

The overview below of our most popular tubing/fitting combinations will help you to make the right choice quickly and reliably.

Product finder for tubing and piping:

→ www.festo.com/productfinder/tubing



Tubing	Suitable for		Applications
	Fitting	Flow control valve	
Standard applications			
PUN-H  → 32	QS  → 100	VFOE  → 356	Maximum flexibility in standard applications thanks to an extremely wide range of options for combining the different types.
PEN  → 39	QS  → 100	VFOE  → 356	Suitable for a wide range of tasks and attractively priced. Can be widely used thanks to materials with good resistance, easy to install. High level of abrasion resistance in dynamic applications (e.g. in energy chains).
PAN  → 42	QS  → 100	VFOH-LE  → 361	Meets all requirements, even for standard applications with increased pressure and temperature ranges.

Product finder for fittings

→ www.festo.com/productfinder/fittings



Tubing	Suitable for		Applications
	Fitting	Flow control valve	
High pressures			
PAN-R  → 47	NPQH  → 130	VFOH-LE  → 361	Powerful in pressure ranges up to 2 MPa, for example in applications with the pressure booster DPA.
PAN-MF  → 47	NPQM  → 146	GRLA  → 358	Complies with DIN 73378: ideal for use in mobile pneumatics. Suitable for increased temperature ranges combined with high pressure ranges.
PUN-H-SF  → 48	NPQR  → 140	CRGRLA  → 362	For applications with increased requirements in terms of robustness, flexibility and pressure resistance. The tubing has maximum flexibility and is resistant to kinking and hydrolysis. The combination is suitable for applications with a high moisture content.
Suitable for use in the food industry ¹⁾ , resistant to chemicals and hydrolysis-resistant			
PUN-H-F  → 49	NPQR  → 140	CRGRLA  → 362	Food-safe to Regulation (EC) No. 1935/2004 and FDA-listed materials. Can be used in the food and packaging industry in combination with fittings NPQR or NPQH. The tubing is hydrolysis-resistant and is suitable for water applications. Extremely flexible and thus easy to install.

1) Food-safe see supplementary material information/declaration of conformity → www.festo.com/supportportal

Well connected: tubing/fitting combinations

Tubing	Suitable for		Applications
	Fitting	Flow control valve	
Suitable for use in the food industry ¹⁾ , resistant to chemicals and hydrolysis-resistant			
PLN  → 58	NPQP  → 154	VFOH-LE  → 361	Resistant to cleaning agents. Easy-to-clean and economical combination, made from material listed for use in the food zone. Can be used instead of the combination with stainless steel fittings.
PTFEN  → 59	NPCK  → 192	CRGRLA  → 362	Easy to clean thanks to the union nut's edge-free design. Maximum corrosion resistance (CRC 4), highly resistant to aggressive acids and alkalis, made from material listed for use in the food zone. Suitable for a wide range of media.
PFAN  → 60	NPQH  → 130	VFOH-LE  → 361	For high temperatures up to 150 °C. Resistant to cleaning agents and made from material listed for use in the food zone.

- 1) Food-safe see supplementary material information/declaration of conformity → www.festo.com/supportportal

Tubing	Suitable for		Applications
	Fitting	Flow control valve	
Antistatic			
PUN-CM  → 60	NPQM  → 146	GRLA  → 358	Antistatic tubing plus solid metal fitting: maximum protection for electric and electronic components.
Flame-retardant			
PUN-V0  → 61	NPQM  → 146	VFOH-LE  → 361	Very safe in areas where there is a risk of fire thanks to flame-retardant properties.
Resistant to welding spatter			
PUN-V0-C  → 62	NPQH  → 130	–	Ideal in the vicinity of welding spatter and safe thanks to an increased tubing wall thickness for all diameters.
PAN-V0  → 64	QS-V0  → 164	–	Safe even in the immediate vicinity of welding spatter thanks to double-walled tubing with special fitting.
Battery production			
PUN-H  → 32	NPQE-F1A ²⁾  → 124	VFOE-F1A ²⁾  → 357	Suitable in battery production areas, ideal in combination with push-in connector NPQE-F1A.

- 2) Recommended for production plants for manufacturing lithium-ion batteries

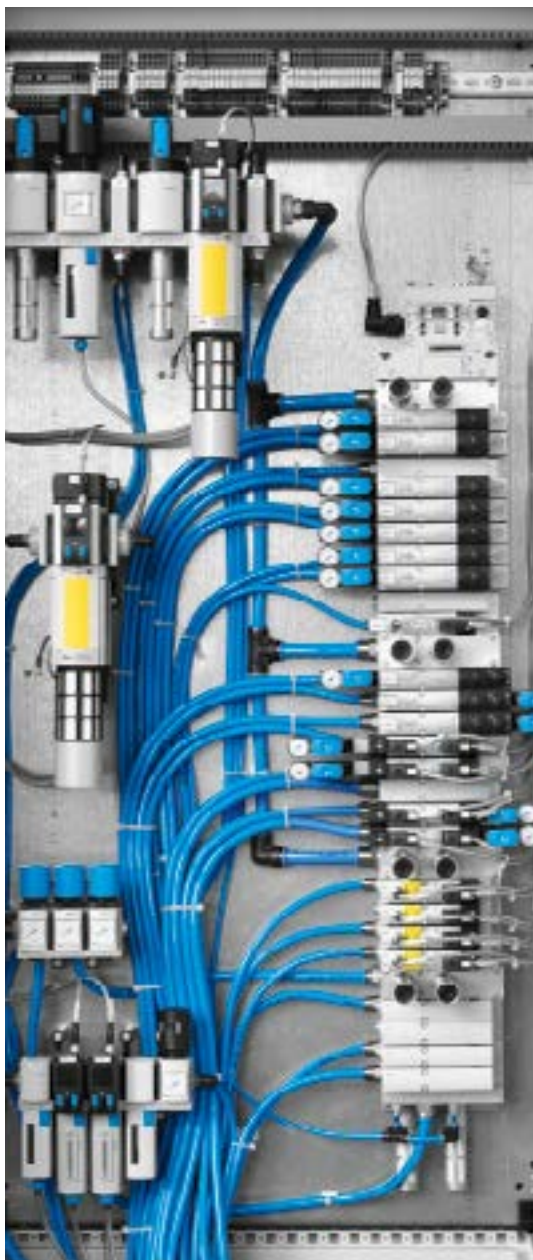
Media resistance:

You can check the media resistance of various materials here:

→ www.festo.com/mediaresistance



Well connected: tubing/fitting combinations



01

Well connected: tubing/fitting combinations





Highlights

from our tubing range



Standard O.D. tubing

PUN-H-SF

- + Sturdy and flexible
- + Resistant to kinking and hydrolysis
- + High thermal and mechanical load capacities

→ 48



Standard O.D. tubing

PEN

- + Suitable for a wide range of tasks and attractively priced
- + Flexible thanks to highly resistant materials, easy to install thanks to optimised bending radii
- + High level of abrasion resistance in dynamic applications

→ 39



Standard O.D. tubing

PTFEN

- + Food safe (FDA-compliant)
- + High chemical and temperature resistance

→ 59

NEW

Product Finder for tubing:

→ www.festo.com/productfinder/tubing



Tubing – the flexible transmission component

Compressed air tubing with its flexibility and low space requirements is an essential component for connections between pneumatic valves, cylinders and decentralised compressed air preparation.

Festo offers a complete range of tubing that is optimised for special requirements.

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Spiral tubing	66

Additional information:

→ www.festo.com/tubing



Applications ¹⁾	Tubing	Fitting	
Standard	PUN-H ★ → 32 PUN-H-DUO → 46	NPQH → 130	
	PEN → 39	QSM ★ → 90 QS ★ → 100	
	PAN → 42		
	PUN → 44 PUN-DUO → 46		
High pressures	PAN-MF → 47	NPQM → 146	
	PAN-R → 47	NPQH → 130	
	PUN-H-SF → 48 NEW	NPQR → 140	
Suitable for use in the food industry, resistant to chemicals and hydrolysis	PUN-H-F → 49	NPQR → 140	
	PUN-H ★ → 51 PUN-H-DUO → 57	NPKA → 242	
	PLN → 58	NPQP → 154	
	PTFEN → 59 PFAN → 60	NPQH → 130	
	PTFEN → 59 PFAN → 60	NPCK → 192	

1) The detailed properties and applications can be found at

→ www.festo.com/tubing

Description
Maximum flexibility in standard applications thanks to an extremely wide range of options for combining the different types.
Suitable for a wide range of tasks and attractively priced. Can be widely used thanks to materials with good resistance, easy to install. High level of abrasion resistance in dynamic applications (e.g. in energy chains).
Meets all requirements, even for standard applications with increased pressure and temperature ranges.
Maximum flexibility in standard applications thanks to an extremely wide range of options for combining the different types.
Complies with DIN standard 73378: ideal for use in mobile pneumatics. Suitable for increased temperature ranges combined with high pressure ranges.
Powerful in pressure ranges up to 2 MPa, for example in applications with the pressure booster DPA.
For applications with increased requirements in terms of robustness, flexibility and pressure resistance. The tubing has maximum flexibility and is resistant to kinking and hydrolysis. The combination is suitable for applications with a high moisture content.
Food-safe to Regulation (EC) No. 1935/2004 and FDA-listed materials. Can be used in the food and packaging industry in combination with fittings NPQR or NPQH. The tubing is hydrolysis-resistant and is suitable for water applications. Extremely flexible and thus easy to install.
Hydrolysis-resistant and suitable for water applications. Corrosion-resistant and made from material listed for use in the food zone.
Resistant to cleaning agents. Easy-to-clean and economical combination, made from material listed for use in the food zone. Can be used instead of the combination with stainless steel fittings.
For high temperatures up to 150°C. Resistant to cleaning agents and made from material listed for use in the food zone.
Easy to clean thanks to the union nut's edge-free design. Maximum corrosionresistance (CRC 4), highly resistant to aggressive acids and alkalis, made from material listed for use in the food zone. Suitable for a wide range of media.

Applications ¹⁾	Tubing	Fitting	
Resistant to chemicals and hydrolysis	PTFEN → 59 PFAN → 60	NPQR → 140	
Antistatic	PUN-CM → 60	NPQM → 146	
Flame-retardant	PUN-V0 → 64	NPQM → 146	
Resistant to welding spatter	PUN-V0-C → 62	NPQH → 130	
	PAN-V0 → 64	QS-V0 → 164	
Battery production	PUN-H ★ → 32	NPQE-F1A → 124	

1) The detailed properties and applications can be found at

→ www.festo.com/tubing

Description	
Optimised design, fewer edges where dirt can collect – all at an attractive price. For high temperatures up to 150 °C. Pressure range up to 1.6 MPa. Maximum corrosion resistance (CRC 4).	
Antistatic tubing plus solid metal fitting: maximum protection for electric and electronic components.	
Very safe in areas where there is a risk of fire thanks to flame-retardant properties.	
Ideal in the vicinity of welding spatter and safe thanks to an increased tubing wall thickness for all diameters.	
Safe even in the vicinity of welding spatter thanks to double-walled tubing with special fitting.	
Suitable in battery production areas, ideal in combination with push-in connector NPQE-F1A. (F1A = Free of copper, zinc and nickel)	

Type	O.D. [mm]	Operating medium				Food-safe ⁹⁾	Food-safe ¹⁰⁾	Material fire test	Antistatic	Halogen-free
		Compressed air, vacuum	Water	Mineral oil	Oxygen					
PUN-H ★	2	■	–	–	–	–	–	–	–	■
	3, 4, 6, 8, 10, 12, 14, 16	■	■	–	–	■	–	UL94 HB	–	■
PUN-H-DUO	4, 6, 8, 10	■	■	–	–	■	–	UL94 HB	–	■
PEN	4, 6, 8, 10, 12, 14, 16	■	■	–	–	–	–	–	–	■
PAN	4, 6, 8, 10, 12, 14, 16	■	–	–	–	–	–	–	–	■
PUN	3, 4, 6, 8, 10, 12, 14, 16	■	–	–	–	–	–	UL94 HB	–	■
PUN-DUO	4, 6, 8, 10	■	–	–	–	–	–	UL94 HB	–	■
PAN-MF	4, 6, 8, 10, 12, 14, 16	■	–	■ ²⁾	–	–	–	–	–	■
PAN-R	4, 6, 8, 10, 12, (14) ¹⁾ , 16	■	–	–	–	–	–	–	–	■
	22, 28	■	–	–	–	–	–	–	–	■
PUN-H-SF NEW	4, 6, 8, 10, 12, 14, 16, 18, 22, 25	■	■	–	–	■	–	UL94 HB	–	■

■ Criterion met

– Not suitable

+++ Extremely suitable

++ Very suitable

+ Limited suitability (on request)

1) Can only be ordered using the configurator.

2) As a precaution, please discuss the operating medium with Festo.

3) Applies to the colours silver and natural

4) Applies to the colour black

5) Outer tubing

	Contact with electric cables	Suitable for energy chains	Approved by the German Technical Control Board (TÜV)	Maritime classification	Resistance				Flexible	Shore hardness ⁸⁾	Page ↑
					Chemicals	Microbes	UV radiation	Hydrolysis			
	■	■	-	-	+	++	++ ⁴⁾	++	+++	D 52 ±3	32
	■	■	■	-	+	++	++ ⁴⁾	++	+++	D 52 ±3	
	■	■	■	-	+	++	+	++	++	D 52 ±3	38
	■	■	■	-	++	++	++ ⁴⁾	+++	++	D 52 ±3	39
	■	■	■	■ ³⁾	+	++	+	++	++	D 55 ±3	42
	■ ⁷⁾	■	■	-	-	-	++ ⁴⁾	+	+++	D 52 ±3	44
	■ ⁷⁾	■	■	-	-	-	+	+	++	D 52 ±3	46
	■	■	-	-	+	++	+	++	+	D 65 ±3	47
	■	■	■	-	+	++	+	++	+	D 62 ±3	47
	■	■	-	-	+	++	+	++	+	D 62 ±3	
	■	■	-	-	+	++	++ ⁴⁾	++	+++	D 54 ±3	48

6) Inner tubing

7) Cables containing organophosphates may damage PUN tubing under unfavourable conditions.

8) Values are determined using test panels. Values determined using tubing may vary.

9) See the supplementary material information

10) See the declaration of conformity

Type	O.D. [mm]	Operating medium						Material fire test	Antistatic	Halogen-free
		Compressed air, vacuum	Water	Mineral oil	Oxygen	Food-safe ⁹⁾	Food-safe ¹⁰⁾			
PUN-H-F	4, 6, 8, 10, 12, 16	■	■	–	■	–	■	UL94 HB	–	■
	14	■	■	–	■	–	■		–	■
PLN	4, 6, 8, 10, 12, 14, 16	■	■	–	–	■	–	–	–	■
PTFEN	4, 6, 8, 10, 12, 14, 16	■	–	–	–	■	–	UL94 V0	–	–
PFAN	3, 4, 6, 8, 10, 12	■	■	–	–	■	■	UL94 V0	–	–
PUN-CM	4, 6, 8, 10, 12, (14) ¹⁾	■	–	–	–	–	–	–	■	■
PUN-V0	6, 8, 10, 16	■	■	–	–	–	–	UL94 V0... V2	–	■
PUN-V0-C	4, 6, 8, 10, 12, 14, 16	■	■	–	–	–	–	UL94 V0... V2	–	■
PAN-V0	4, 6, 8, 10, 12	■	■	■	–	–	–	UL94 V0	–	–

- Criterion met
- Not suitable
- +++ Extremely suitable
- ++ Very suitable
- + Limited suitability (on request)

- 1) Can only be ordered using the configurator.
- 2) As a precaution, please discuss the operating medium with Festo.
- 3) Applies to the colours silver and natural
- 4) Applies to the colour black
- 5) Outer tubing

	Contact with electric cables	Suitable for energy chains	Approved by the German Technical Control Board (TÜV)	Maritime classification	Resistance				Flexible	Shore hardness ⁸⁾	↑ Page
					Chemicals	Microbes	UV radiation	Hydrolysis			
	■	■	■	–	+	++	++ ⁴⁾	++	++	D 52 ±3	49
	■	■	■	–	+	++	++ ⁴⁾	++	++	D 52 ±3	
	■	–	■	–	++	++	++ ⁴⁾	+++	+	D 59 ±3	58
	■	–	–	–	+++	++	++	+++	+	D 55 ±5	59
	■	–	■	–	+++	++	++	+++	+	D 60 ±5	60
	■	■	–	–	+	++	++	++	++	D 52 ±3	60
	■	■	■	–	+	++	++ ⁴⁾	++	++	D 54 ±3	61
	■	■	■	–	+	++	++ ⁴⁾	++	++	D 54 ±3	62
	■	■	–	–	+	++	++	++	++	A 72 ±4 ⁵⁾ D 57 ±3 ⁶⁾	64

6) Inner tubing

7) Cables containing organophosphates may damage PUN tubing under unfavourable conditions.

8) Values are determined using test panels. Values determined using tubing may vary.

9) See the supplementary material information

10) See the declaration of conformity

Tubing/fitting combinations

Type	QSM, QS ¹⁾	NPQH ²⁾	NPQR ³⁾	NPQM ⁴⁾	NPQP ⁵⁾	QS-V0 ⁶⁾	NPCK ⁷⁾	NPKA ⁸⁾	CN ⁹⁾	CK ¹⁰⁾	CQ ¹¹⁾	Page ↑
Standard O.D. tubing												
PUN-H ★	+++	+++	+++	++	++	+	++	+++	-	++	-	32
PUN-H-DUO	+++	+++	+++	++	++	+	++	++	-	++	-	38
PEN	+++	++	++	+++	++	+	++	++	++	++	-	39
PAN	+++	++	++	++	++	+	++	++	++	++	-	42
PUN	+++	++	++	++	++	+	++	++	++	++	-	44
PUN-DUO	+++	++	++	++	++	+	++	++	++	++	-	46
PAN-MF	++	++	++	++	++	+	-	-	-	-	-	47
PAN-R	++	+++	++	++	++	+	-	++	-	-	++	47
PUN-H-SF NEW	++	+++	+++	++	++	+	-	++	-	-	-	48
PUN-H-F	++	+++	+++	++	+++	+	+++	+++	-	++	-	49
PLN	++	++	+++	++	+++	+	++	++	+	++	-	58
PTFEN	++	+++	+++	++	+++	+	+++	++	++	++	-	59
PFAN	++	+++	+++	++	+++	+	+++	++	++	++	-	60
PUN-CM	+	++	++	+++	+	+	++	+	+	+	-	60
PUN-V0	+	++	++	+++	+	+	++	+	+	++	-	61
PUN-V0-C	+	+++	++	++	+	+	-	-	-	-	-	62
PAN-V0	+	+	+	+	+	+++	-	-	-	-	-	64
→ Page	90	130	140	146	154	164	192	242	196	204	248	

1) For tubing O.D. 2 ... 12 and 16, 22 mm

2) For tubing O.D. 4 ... 14 mm

3) For tubing O.D. 4 ... 16 mm

4) For tubing O.D. 3 ... 14 mm

5) For tubing O.D. 4 ... 12 mm

6) For tubing O.D. 4 ... 12 mm

7) For tubing O.D. 4 ... 10 mm

8) For tubing O.D. 6 mm

9) For tubing O.D. 3 ... 8 mm

10) For tubing O.D. 4 ... 8 mm

11) For tubing size 22 and 28 (22 also possible with QS)

 Recommended tubing/fitting combination

++ Suitable

+ Limited suitability because:

- Tubing PLN with fitting CN provides little flexibility
- No conductive contact with PUN-CM
- Incompatible characteristic "resistance to welding spatter" with PUN-V0/PUN-V0-C

- Sub-optimal combination with regard to welding spatter resistance when insulation is removed from double-sheathed tubing PAN-V0

Note: the push-in fitting QS-V0 is specially designed for tubing PAN-V0 with the insulation removed using tubing cutter PAN-V0S.

With other fittings, there is a gap near the releasing sleeve and the protective function against welding spatter is lost.

There is also an increased risk of the tubing kinking in this area.

However, this risk of kinking can be prevented by ensuring large bending radii when installing the tubing.

- Not suitable

Tubing/fitting combinations

	Description	Recommended quick connector
Type		CK
I.D. tubing		
PU	Highly flexible fibre-reinforced plastic tubing characterised by high resistance to abrasion and to kinks.	Metal design Male thread with sealing ring
→ Page	65	204

For standard applications

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 2 ... 3 mm					
	2	1.2	Natural	133038	50
			Red	133040	
			Black	133039	
	3	2.1	Natural	197375	500
			Black	197389	
			Blue	197382	
			Green	558291	
			Red	558284	
			Silver	558277	
			Yellow	558298	
			Natural	558263	
			Black	558249	
			Blue	558256	
			Silver	558270	

For standard applications

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 4 mm					
	4	2.6	Black	★ 197390	50
			Natural	★ 197376	
			Blue	★ 197383	
			Yellow	558299	
			Green	558292	
			Red	★ 558285	
			Silver	★ 558278	
			Translucent red	8048675	
			Translucent blue	★ 8048671	
			Translucent green	8048677	
			Translucent black	8048673	
			Translucent yellow	8048679	
			Silver	★ 558271	500
			Natural	★ 558264	
			Black	★ 558250	
			Blue	★ 558257	
			Translucent red	8048676	
			Translucent blue	★ 8048672	
			Translucent black	8048674	
			Translucent green	8048678	
			Translucent yellow	8048680	

For standard applications

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 6 mm					
	6	4	Blue	★ 197384	50
			Natural	★ 197377	
			Black	★ 197391	
			Silver	★ 558279	
			Yellow	558300	
			Green	558293	
			Red	★ 558286	
			Translucent red	8048685	
			Translucent green	8048687	
			Translucent blue	★ 8048681	
			Translucent yellow	8048689	
			Translucent black	8048683	
			Silver	★ 558272	500
			Natural	★ 558265	
			Black	★ 558251	
			Blue	★ 558258	
			Translucent black	8048684	
			Translucent red	8048686	
			Translucent green	8048688	
			Translucent yellow	8048690	
			Translucent blue	★ 8048682	

For standard applications

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 8 mm					
	8	5.7	Black	★ 197392	50
			Blue	★ 197385	
			Natural	★ 197378	
			Yellow	558301	
			Green	558294	
			Red	★ 558287	
			Silver	★ 558280	
			Translucent red	8048695	
			Translucent green	8048697	
			Translucent yellow	8048699	
			Translucent blue	★ 8048691	
			Translucent black	8048693	
			Black	★ 558252	400
			Silver	★ 558273	
			Natural	★ 558266	
			Blue	★ 558259	
			Translucent black	8048694	
			Translucent red	8048696	
			Translucent green	8048698	
			Translucent yellow	8048700	
			Translucent blue	★ 8048692	

For standard applications

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 10 mm					
	10	7	Blue	★ 197386	50
			Black	★ 197393	
			Natural	★ 197379	
			Silver	★ 558281	
			Yellow	558302	
			Green	558295	
			Red	★ 558288	
			Translucent black	8048703	
			Translucent red	8048705	
			Translucent green	8048707	
			Translucent yellow	8048709	
			Translucent blue	★ 8048701	
			Black	★ 558253	300
			Silver	★ 558274	
			Natural	★ 558267	
			Blue	★ 558260	
			Translucent black	8048704	
			Translucent red	8048706	
			Translucent green	8048708	
			Translucent yellow	8048710	
			Translucent blue	★ 8048702	

For standard applications

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 12 mm					
	12	8	Black	★ 197394	50
			Blue	★ 197387	
			Natural	★ 197380	
			Red	★ 558289	
			Silver	★ 558282	
			Yellow	558303	
			Green	558296	
			Translucent red	8048715	
			Translucent green	8048717	
			Translucent yellow	8048719	
			Translucent blue	★ 8048711	
			Translucent black	8048713	
			Blue	★ 558261	200
			Black	★ 558254	
			Silver	★ 558275	
			Natural	★ 558268	
			Translucent blue	★ 8048712	
			Translucent black	8048714	
			Translucent red	8048716	
			Translucent green	8048718	
			Translucent yellow	8048720	

For standard applications

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 14 ... 16 mm					
	14	9.8	Blue	★ 570386	50
			Black	570387	
			Natural	570388	
	16	11	Black	★ 197395	100
			Blue	★ 197388	
			Natural	★ 197381	
			Red	★ 558290	
			Silver	★ 558283	
			Yellow	558304	
			Green	558297	
			Blue	★ 558262	
			Black	558255	
			Silver	558276	
			Natural	558269	
PUN-H-DUO – paired plastic tubing, highly flexible Highly flexible, high abrasion resistance, high kink resistance Polyurethane					
	4	2.6	Blue/black	197396	50
	6	4		197397	
	8	5.7		197398	
	10	7		197399	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pun-h



For standard applications

	D1	di	Colour	TNR	PE
PEN – suitability for energy chains Chemical resistance, high hydrolysis resistance Polyethylene 4 ... 8 mm					
	4	2.7	Black	543240	50
			Natural	543246	
			Yellow	551480	
			Green	551468	
			Silver	551462	
			Red	551474	
			Blue	551456	
			Black	551438	500
			Silver	551450	
			Blue	551444	
	6	4	Black	543241	50
			Natural	543247	
			Blue	551457	
			Green	551469	
			Yellow	551481	
			Silver	551463	
			Red	551475	
			Black	551439	500
			Silver	551451	
			Blue	551445	
	8	5.7	Natural	543248	50
			Black	543242	
			Green	551470	
			Blue	551458	
			Yellow	551482	
			Silver	551464	
			Red	551476	
			Black	551440	400
			Silver	551452	
			Blue	551446	

For standard applications

	D1	di	Colour	TNR	PE
PEN – suitable for energy chains Chemical resistance, high hydrolysis resistance Polyethylene 10 ... 14 mm					
	10	7	Black	543243	50
			Natural	543249	
			Red	551477	
			Blue	551459	
			Yellow	551483	
			Green	551471	
			Silver	551465	
			Blue	551447	300
			Black	551441	
			Silver	551453	
	12	8.4	Natural	543250	50
			Black	543244	
			Blue	551460	
			Green	551472	
			Yellow	551484	
			Silver	551466	
			Red	551478	
			Black	551442	200
			Blue	551448	
			Silver	551454	
	14	9.5	Natural	570517	50
			Black	570516	

For standard applications

	D1	di	Colour	TNR	PE
PEN – suitable for energy chains Chemical resistance, high hydrolysis resistance Polyethylene 16 mm					
	16	10.8	Natural	543251	50
			Black	543245	
			Red	551479	
			Blue	551461	
			Yellow	551485	
			Green	551473	
			Silver	551467	
			Blue	551449	100
			Black	551443	
			Silver	551455	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pen



For standard applications

	D1	di	Colour	TNR	PE
PAN – high load capacity high thermal and mechanical load capacities Polyamide 4 ... 8 mm					
	4	2.9	Silver	152697	50
			Natural	546284	
			Yellow	553930	
			Red	553924	
			Blue	553906	
			Green	553918	
			Black	553912	500
			Silver	553888	
			Blue	553894	
			Black	553900	
	6	4	Silver	152699	50
			Natural	546285	
			Yellow	553931	
			Black	553913	
			Red	553925	
			Blue	553907	
			Green	553919	500
			Black	553901	
			Silver	553889	
			Blue	553895	
	8	5.9	Silver	152700	50
			Natural	546286	
			Yellow	553932	
			Black	553914	
			Red	553926	
			Blue	553908	
			Green	553920	400
			Silver	553890	
			Blue	553896	
			Black	553902	

For standard applications

	D1	di	Colour	TNR	PE
PAN – high load capacity High thermal and mechanical load capacities Polyamide 10 ... 14 mm					
	10	7	Silver	152701	50
			Natural	546287	
			Green	553921	
			Red	553927	
			Yellow	553933	
			Black	553915	
			Blue	553909	
			Black	553903	300
			Silver	553891	
			Blue	553897	
	12	8.4	Silver	152702	50
			Natural	546288	
			Red	553928	
			Black	553916	
			Yellow	553934	
			Blue	553910	
			Green	553922	
			Silver	553892	200
			Black	553904	
			Blue	553898	
	14	10	Silver	570392	50
PAN – high load capacity High thermal and mechanical load capacities Polyamide 16 mm					
	16	12	Silver	152703	50
			Natural	546289	
			Red	553929	
			Yellow	553935	
			Black	553917	
			Blue	553911	
			Green	553923	
			Silver	553893	100
			Black	553905	
			Blue	553899	

Configurable products



This product and all its product options can
be ordered online via the configurator:
www.festo.com/catalogue/pan



For standard applications

	D1	di	Colour	TNR	PE
PUN – highly flexible Wide selection, many different variants Polyurethane 3 ... 6 mm					
	3	2.1	Silver	152583	50
			Blue	159660	
			Black	159661	
			Green	178423	
			Red	178409	
			Yellow	178416	
			Silver	525738	500
			Blue	525745	
			Black	553936	
	4	2.6	Silver	152584	50
			Blue	159662	
			Black	159663	
			Green	178424	
			Red	178410	
			Yellow	178417	
			Silver	525739	500
			Blue	525746	
			Black	553937	
	6	4	Silver	152586	50
			Blue	159664	
			Black	159665	
			Yellow	178418	
			Green	178425	
			Red	178411	
			Silver	525740	500
			Blue	525747	
			Black	553938	

For standard applications

	D1	di	Colour	TNR	PE
PUN – highly flexible Wide selection, many different variants Polyurethane 8 ... 12 mm					
	8	5.7	Silver	152587	50
			Blue	159666	
			Black	159667	
			Red	178412	
			Green	178426	
			Yellow	178419	
			Blue	525748	400
			Silver	525741	
			Black	553939	
	10	7	Silver	152588	50
			Blue	159668	
			Black	159669	
			Red	178413	
			Green	178427	
			Yellow	178420	
			Blue	525749	300
			Silver	525742	
			Black	553940	
	12	8	Silver	152589	50
			Blue	159670	
			Black	159671	
			Red	178414	
			Green	178428	
			Yellow	178421	
			Blue	525750	200
			Silver	525743	
			Black	553941	

PUN – highly flexible Wide selection, many different variants Polyurethane 14 ... 16 mm					
	14	9.8	Silver	570389	50
			Blue	570390	
			Black	570391	
	16	11	Silver	152590	100
			Blue	159672	
			Black	159673	
			Red	178415	
			Green	178429	
			Yellow	178422	
			Blue	525751	
			Silver	525744	
			Black	553942	

For standard applications

	D1	di	Colour	TNR	PE
PUN-DUO – paired plastic tubing Highly flexible, high abrasion resistance, high kink resistance Polyurethane					
	4	2.6	Silver	152822	50
			Blue/black	159674	
	6	4	Silver	152823	
			Blue/black	159675	
	8	5.7	Silver	152824	
			Blue/black	159676	
	10	7	Silver	152825	
			Blue/black	159677	

Configurable products



This product and all its product options can
be ordered online via the configurator:
www.festo.com/catalogue/pun



For special requirements

	D1	di	Colour	TNR	PE
PAN-MF – resistant to pressures up to 3.1 MPa For use in mobile pneumatic applications (DIN 73378 automotive approval certificate) Polyamide					
	4	2.5	Black	570357	50
	6	4		572091	500
				570358	50
				572093	500
	8	6		570359	50
	10	7.5		570360	
	12	9		570361	
	14	10		570362	
	16	12		570363	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pan-mf



PAN-R – resistant to pressures up to 3.5 MPa Polyamide 4 ... 16 mm					
	4	2.5	Silver	541674	50
	6	3.8		541675	
	8	5		541676	
	10	6.2		541677	
	12	7.6		541678	
	16	10		541679	

For special requirements

	D1	di	Colour	TNR	PE
PAN-R – high load capacity High thermal and mechanical load capacities Polyamide 22, 28 mm					
	22	18	Black	8036207	50
	28	23		8036208	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pan-r

**PUN-H-SF – robust and flexible**

Resistant to kinking and hydrolysis

High thermal and mechanical load capacities

Polyurethane

	4	2.3	Blue	8174912	50
			Black	8174911	
	6	3.5		8167899	
			Blue	8167900	
	8	4.9		8167902	
			Black	8167901	
	10	6		8167905	
			Blue	8167904	
	12	7.4		8167907	
			Black	8167906	
	14	8.6	Blue	8167909	25
			Black	8167908	
	16	9.85	Blue	8167911	
			Black	8167910	
	18	11.2		8167913	
			Blue	8167912	
	22	13.4		8167915	
			Black	8167914	
	25	15.3		8167917	
			Blue	8167916	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pun-h-sf



Suitable for use in the food industry, resistant to chemicals, resistant to hydrolysis

	D1	di	Colour	TNR	PE
PUN-H-F – food-safe Food-safe → www.festo.com/certificates/PUN_H_F Resistant to hydrolysis and microbes Polyurethane 4 ... 8 mm					
	4	2.6	Black	8153385	50
			Yellow	8153384	
			Green	8153383	
			Translucent blue	8153382	
			Blue	8153381	
			Red	8153379	
			Natural	8153378	
	6	4		8153428	
			Black	8153392	
			Yellow	8153391	
			Green	8153390	
			Translucent blue	8153389	
			Blue	8153388	
			Red	8153386	
	8	5.7	Natural	8153429	
			Black	8153399	
			Yellow	8153398	
			Green	8153397	
			Translucent blue	8153396	
			Blue	8153395	
			Red	8153393	

Suitable for use in the food industry, resistant to chemicals, resistant to hydrolysis

	D1	di	Colour	TNR	PE
PUN-H-F – food-safe Food-safe → www.festo.com/certificates/PUN_H_F Resistant to hydrolysis and microbes Polyurethane 10 ... 16 mm					
	10	7	Natural	8153430	50
			Black	8153406	
			Yellow	8153405	
			Green	8153404	
			Translucent blue	8153403	
			Blue	8153402	
			Red	8153400	
	12	8	Black	8153414	
			Red	8153408	
			Natural	8153407	
			Green	8153412	
			Yellow	8153413	
			Blue	8153410	
			Translucent blue	8153411	
	14	9.8	Black	8153418	
			Blue	8153417	
			Red	8153416	
			Natural	8153415	
	16	11	Black	8153426	
			Yellow	8153425	
			Natural	8153419	
			Green	8153424	
			Translucent blue	8153423	
			Blue	8153422	
			Red	8153420	

Suitable for use in the food industry, resistant to chemicals, resistant to hydrolysis

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 2 ... 3 mm					
	2	1.2	Natural	133038	50
			Red	133040	
			Black	133039	
	3	2.1	Natural	197375	500
			Black	197389	
			Blue	197382	
			Green	558291	
			Red	558284	
			Silver	558277	
			Yellow	558298	
			Natural	558263	
			Black	558249	
			Blue	558256	
			Silver	558270	

Suitable for use in the food industry, resistant to chemicals, resistant to hydrolysis

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 4 mm					
	4	2.6	Black	★ 197390	50
			Natural	★ 197376	
			Blue	★ 197383	
			Yellow	558299	
			Green	558292	
			Red	★ 558285	
			Silver	★ 558278	
			Translucent red	8048675	
			Translucent blue	★ 8048671	
			Translucent green	8048677	
			Translucent black	8048673	
			Translucent yellow	8048679	
			Silver	★ 558271	500
			Natural	★ 558264	
			Black	★ 558250	
			Blue	★ 558257	
			Translucent red	8048676	
			Translucent blue	★ 8048672	
			Translucent black	8048674	
			Translucent green	8048678	
			Translucent yellow	8048680	

Suitable for use in the food industry, resistant to chemicals, resistant to hydrolysis

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 6 mm					
	6	4	Blue	★ 197384	50
			Natural	★ 197377	
			Black	★ 197391	
			Silver	★ 558279	
			Yellow	558300	
			Green	558293	
			Red	★ 558286	
			Translucent red	8048685	
			Translucent green	8048687	
			Translucent blue	★ 8048681	
			Translucent yellow	8048689	
			Translucent black	8048683	
			Silver	★ 558272	500
			Natural	★ 558265	
			Black	★ 558251	
			Blue	★ 558258	
			Translucent black	8048684	
			Translucent red	8048686	
			Translucent green	8048688	
			Translucent yellow	8048690	
			Translucent blue	★ 8048682	

Suitable for use in the food industry, resistant to chemicals, resistant to hydrolysis

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 8 mm					
	8	5.7	Black	★ 197392	50
			Blue	★ 197385	
			Natural	★ 197378	
			Yellow	558301	
			Green	558294	
			Red	★ 558287	
			Silver	★ 558280	
			Translucent red	8048695	
			Translucent green	8048697	
			Translucent yellow	8048699	
			Translucent blue	★ 8048691	
			Translucent black	8048693	
			Black	★ 558252	400
			Silver	★ 558273	
			Natural	★ 558266	
			Blue	★ 558259	
			Translucent black	8048694	
			Translucent red	8048696	
			Translucent green	8048698	
			Translucent yellow	8048700	
			Translucent blue	★ 8048692	

Suitable for use in the food industry, resistant to chemicals, resistant to hydrolysis

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 10 mm					
	10	7	Blue	★ 197386	50
			Black	★ 197393	
			Natural	★ 197379	
			Silver	★ 558281	
			Yellow	558302	
			Green	558295	
			Red	★ 558288	
			Translucent black	8048703	
			Translucent red	8048705	
			Translucent green	8048707	
			Translucent yellow	8048709	
			Translucent blue	★ 8048701	
			Black	★ 558253	300
			Silver	★ 558274	
			Natural	★ 558267	
			Blue	★ 558260	
			Translucent black	8048704	
			Translucent red	8048706	
			Translucent green	8048708	
			Translucent yellow	8048710	
			Translucent blue	★ 8048702	

Suitable for use in the food industry, resistant to chemicals, resistant to hydrolysis

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 12 mm					
	12	8	Black	★ 197394	50
			Blue	★ 197387	
			Natural	★ 197380	
			Red	★ 558289	
			Silver	★ 558282	
			Yellow	558303	
			Green	558296	
			Translucent red	8048715	
			Translucent green	8048717	
			Translucent yellow	8048719	
			Translucent blue	★ 8048711	
			Translucent black	8048713	
			Blue	★ 558261	200
			Black	★ 558254	
			Silver	★ 558275	
			Natural	★ 558268	
			Translucent blue	★ 8048712	
			Translucent black	8048714	
			Translucent red	8048716	
			Translucent green	8048718	
			Translucent yellow	8048720	

Suitable for use in the food industry, resistant to chemicals, resistant to hydrolysis

	D1	di	Colour	TNR	PE
PUN-H – highly flexible Various uses → www.festo.com/tubing Polyurethane 14 ... 16 mm					
	14	9.8	Blue	★ 570386	50
			Black	570387	
			Natural	570388	
	16	11	Black	★ 197395	100
			Blue	★ 197388	
			Natural	★ 197381	
			Red	★ 558290	
			Silver	★ 558283	
			Yellow	558304	
			Green	558297	
			Blue	★ 558262	
			Black	558255	
			Silver	558276	
			Natural	558269	
PUN-H-DUO – paired plastic tubing Highly flexible, high abrasion resistance, high kink resistance Polyurethane					
	4	2.6	Blue/black	197396	50
	6	4		197397	
	8	5.7		197398	
	10	7		197399	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pun-h



Suitable for use in the food industry, resistant to chemicals, resistant to hydrolysis

	D1	di	Colour	TNR	PE
PLN – high hydrolysis resistance Various uses → www.festo.com/tubing Polyethylene 4 ... 14 mm					
	4	2.9	Natural	193403	50
			Black	195280	
			Silver	558211	
			Blue	558205	
			Red	558217	
	6	4	Natural	193404	
			Black	195281	
			Blue	558206	
			Silver	558212	
			Red	558218	
	8	5.9	Natural	193405	
			Black	195282	
			Silver	558213	
			Blue	558207	
			Red	558219	
	10	7	Natural	193406	
			Black	195283	
			Red	558220	
			Silver	558214	
			Blue	558208	
	12	8.4	Natural	193407	
			Black	195284	
			Red	558221	
			Silver	558215	
			Blue	558209	
	14	10	Black	570423	
			Natural	570424	

Suitable for use in the food industry, resistant to chemicals, resistant to hydrolysis

	D1	di	Colour	TNR	PE
PLN – high hydrolysis resistance Various uses → www.festo.com/tubing Polyethylene 16 mm					
	16	12	Black	539065	50
			Natural	539064	
			Blue	558210	
			Red	558222	
			Silver	558216	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pln



Chemical-resistant, hydrolysis-resistant

	D 1	di	Colour	TNR	PE
PTFEN – for high temperatures High chemical resistance, high hydrolysis resistance Various uses → www.festo.com/tubing Polytetrafluoroethylene					
	8	5.9	Natural	8061173	50
	12	8.4		8061175	
	4	2.9		8061171	100
	8	5.9		8061179	400
	6	4		8061172	100
				8061178	500
	10	7		8061174	50
				8061180	300
	14	10		8061176	50
	16	11		8061177	25

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/ptfen



Chemical-resistant, hydrolysis-resistant

	D 1	di	Colour	TNR	PE
PFAN – for high temperatures High chemical resistance, high hydrolysis resistance Various uses → www.festo.com/tubing Perfluoroalkoxy alkane					
	4	2.9	Natural	197061	50
	8	5.9		197063	
	12	8.4		197065	
	3	2.3		8061167	
	6	4		197062	
	10	7		197064	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pfan



Antistatic

	D1	di	Colour	TNR	PE
PUN-CM – flexible, suitable for energy chains Polyurethane					
	4	2.5	Black	188882	50
	6	4		188883	
	8	5.5		130816	
	10	7		130817	
	12	8		130818	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pun-cm



Flame-retardant

	D1	di	Colour	TNR	PE
PUN-V0 – single-sheath plastic tubing, flexible For use in the close vicinity of welding applications Polyurethane					
	6	4	White	525454	50
			Green	525446	
			Yellow	525458	
			Black	525438	
			Red	525450	
			Brown	525462	
			Blue	525442	
	8	5.7	White	525455	
			Green	525447	
			Black	525439	
			Yellow	525459	
			Red	525451	
			Brown	525463	
			Blue	525443	
	10	7		525444	
			Yellow	525460	
			Green	525448	
			Black	525440	
			Red	525452	
			White	525456	
			Brown	525464	
	16	11.8	Blue	570768	
			Black	570767	

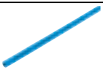
Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pun-v0



Resistant to welding spatter

	D1	di	Colour	TNR	PE
PUN-V0-C – Single-sheath plastic tubing, flexible For use in the immediate vicinity of welding applications Polyurethane 4 ... 12 mm					
	4	2	Blue	570350	50
	6		Black	570349	
				561698	
			Yellow	561718	
			Blue	561702	
			White	561714	
			Green	561706	
			Brown	561722	
			Red	561710	
	8	4	Brown	561723	
			Blue	561703	
			White	561715	
			Green	561707	
			Yellow	561719	
			Red	561711	
			Black	561699	
	10	6	Red	561712	
			Brown	561724	
			Blue	561704	
			White	561716	
			Green	561708	
			Yellow	561720	
			Black	561700	
	12	8	Red	561713	
			Blue	561705	
			Brown	561725	
			White	561717	
			Green	561709	
			Yellow	561721	
			Black	561701	

Resistant to welding spatter

	D1	di	Colour	TNR	PE
PUN-V0-C – Single-sheath plastic tubing, flexible For use in the immediate vicinity of welding applications Polyurethane 14, 16 mm					
	14	9.8	Black	570351	50
			Blue	570352	
	16	11	Black	570353	
			Blue	570354	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pun-v0



Resistant to welding spatter

	D1	di	Colour	TNR	PE
PAN-V0 – flexible For use in the close vicinity of welding applications Polyamide, PVC casing					
	6	2.5	Blue	132899	50
	8	4		132905	
			Black	160550	
			White	525478	
			Green	525470	
			Yellow	525482	
			Red	525474	
	10	6	Blue	132906	
			Black	160551	
			White	525479	
			Green	525471	
			Yellow	525483	
			Red	525475	
	12	7.5	Blue	132907	
			Black	160552	
			Green	525472	
			White	525480	
			Yellow	525484	
			Red	525476	
	14	9	Black	160553	
			Red	525477	
			Blue	525469	
			White	525481	
			Green	525473	
			Yellow	525485	

Configurable products



This product and all its product options can
be ordered online via the configurator:
www.festo.com/catalogue/pan-v0



Standard I.D. tubing

	D 1	di	Colour	TNR	PE
PU – highly flexible, fibre-reinforced High abrasion resistance, high kink resistance Polyurethane					
	17.6	13	Black	12133	50
	11.6	9		12134	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pu



For standard applications

	D 1	Working length [m]	Number of windings	Colour	TNR	PE
PUN-S – highly flexible Polyurethane						
	4	1.5	70	Blue	197589	1
		0.5	20	Black	197602	
		1	45		197603	
		1.5	70		197604	
		0.5	20	Blue	197587	
		1	45		197588	
	6		23		197590	
		2	52		197591	
		6	168		197592	
		1	23	Black	197605	
		6	168		197607	
		2	52		197606	
	8	1	12		197608	
		6	87		197610	
		2	27		197609	
		1	12	Blue	197593	
		2	27		197594	
		6	87		197595	
	10		70		197598	
		1	9.5	Black	197611	
		2	22		197612	
		6	70		197613	
		1	9.5	Blue	197596	
		2	22		197597	
	12	1	9		197599	
		2	20		197600	
		6	64		197601	
		1	9	Black	197614	
		2	20		197615	
		6	64		197616	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pun-s



For standard applications

	D 1	Working length [m]	Number of windings	Colour	TNR	PE
PUN-S-DUO – paired spiral plastic tubing Highly flexible Polyurethane						
	4	0.5	20	Blue/ black	197617	1
		1	45		197618	
		1.5	70		197619	
	6	1	23		197620	
		2	52		197621	
		6	168		197622	
	8	1	12		197623	
		2	27		197624	
		6	87		197625	
	10	1	9.5		197626	
		2	22		197627	
		6	70		197628	
	12	1	9		197629	
		2	20		197630	
		6	64		197631	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pun-s



Pre-assembled

	D 1	Working length [m]	Number of windings	Colour	TNR	PE
PUN-SG – highly flexible, fibre-reinforced With non-removable, rotatable fittings with male thread Polyurethane						
	9.5	2.4	21	Blue	533463	1
		6	66		533465	
		4.8	50		533464	
	11.7	6	53		533467	
		4.8	41		533466	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pun-sg

**PPS – high thermal and mechanical load capacities**

With 2 rotatable connectors and captive sealing rings OL
Polyamide

	7.8	15	86	Blue	19797	1
	6.3	7.5	44		19798	
		15	90		19799	
	7.8	7.5	43		19796	

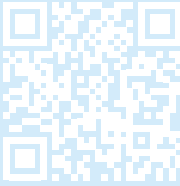
Configurable products

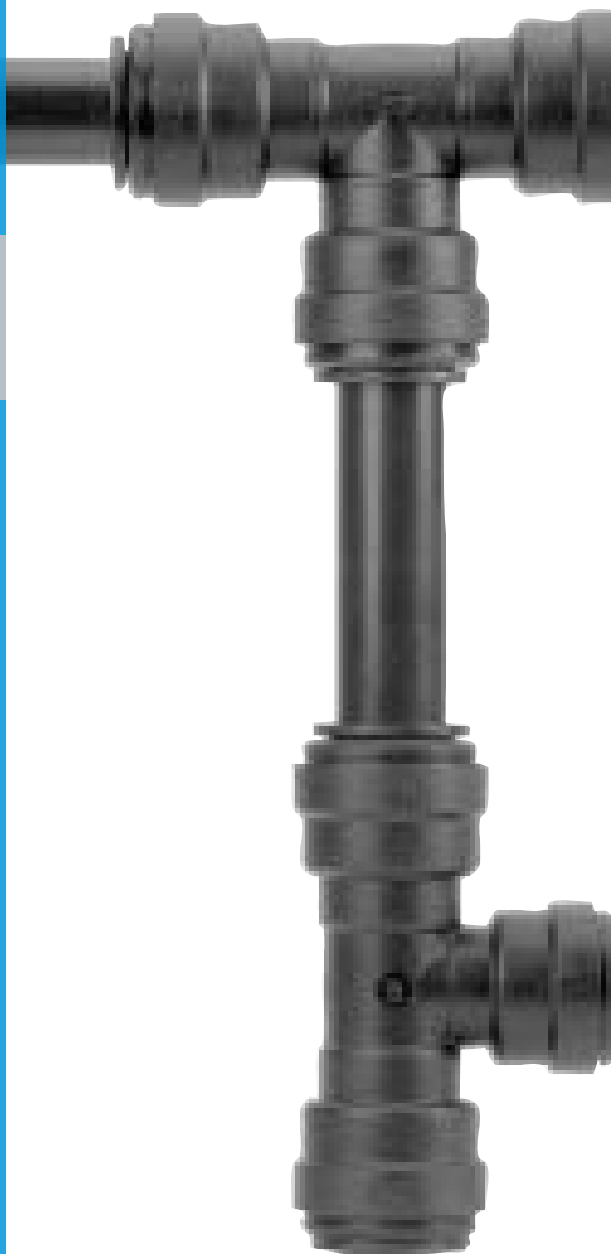


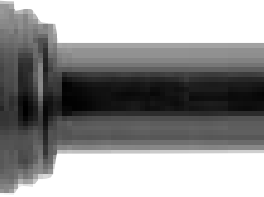
This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pps



→ www.festo.com/service2see







Highlights

from our pipe range

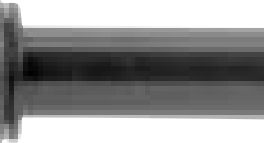


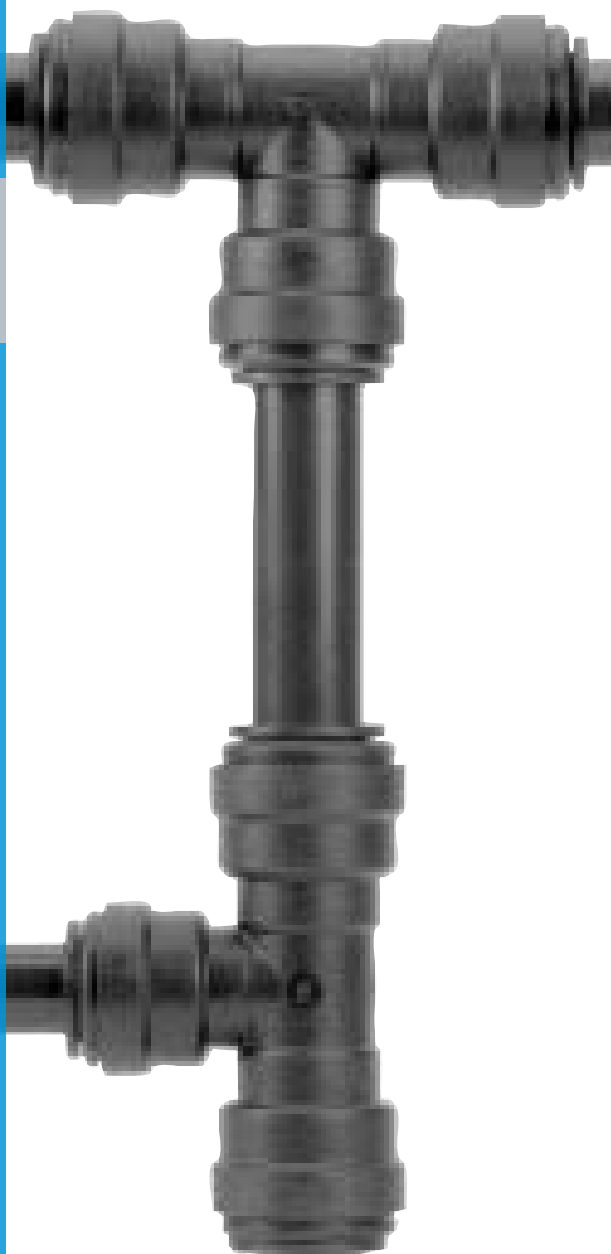
Plastic-coated metal pipes

PM

- + Have the corrosion resistance of plastic and the deformation resistance of metal
- + Can be bent straight and reshaped several times without a pipe-bending device and without being damaged

→ 77





Pipes – for the stable transfer of media

For supplying compressed air within machines as well as for small compressed air networks in buildings, the compressed air piping PQ is ideal.

Available in both aluminium and polyamide, the PQ range is the perfect complement for the push-fit system CQ. And regardless of whether the pipe is plastic or aluminium, both designs have smooth inside walls to ensure optimum flow conditions.

Features _____ 74

Additional information:

→ www.festo.com/piping



Applications	Pipe	Fitting	
Corrosion-resistant	PQ-PA → 76	CQ → 244	
	PQ-AL → 76	CQ → 244	
	PM → 77	QS → 98	

Description
Rigid pipe made from high quality polyamide; corrosion-resistant, flexible and maintenance-free. Smooth inside wall ensures optimum flow conditions
Rigid aluminium pipe, corrosion-resistant. Smooth inside wall ensures optimum flow conditions.
The PM pipe has the corrosion resistance of plastic and the deformation resistance of metal. It can be bent, straightened and reshaped several times without pipe-bending equipment and without being damaged.

Plastic piping

	D 1	di	Colour	TNR	PE
PQ-PA – corrosion-resistant, flexible Polyamide					
	12	9	Black	177728	1
	15	12		177729	
	18	14		177730	
	22	18		177731	
	28	23		194594	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pq-pa



Aluminium pipe

	D 1	di	Colour	TNR	PE
PQ-AL – corrosion-resistant Wrought aluminium alloy					
	12	10	Silver	177732	1
	15	13		177733	
	18	16		177734	
	22	20		177735	
	28	25		194593	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pq-al



Plastic-coated metal tube

	D 1	di	Colour	TNR	PE
PM – corrosion-resistant, dimensionally stable Wrought aluminium alloy, polyethylene					
	6	3.92	Black	9084	50
	8	5.2		9087	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/pm



Highlights

04

Push-in fittings for O.D. tubing – Highlights



Highlights

from our range of push-in fittings for O.D. tubing



Push-in fittings

QSM, mini ★

QS, standard ★

With more than 1000 types, you can always find the fitting of your choice.

- + Quick to install: simply plug in
- + Easy to remove: just press down the blue releasing ring

→ QSM, mini series: **89**

→ QS, standard series: **100**



Push-in fittings

NPQE-F1A

- + For manufacturing lithium-ion batteries

- + Cost-effective

→ **124**



Cartridges

NPQX

- + Versions with aluminium or polyamide housing
- + Specially developed for valve terminal VTUX

→ **160**

NEW

Product finder for fittings

→ www.festo.com/productfinder/fittings



The right fitting for every application

The range of fittings from Festo is incredibly diverse, with a portfolio that consists of materials, designs and connections in a variety of standard or innovative options. And that's not to mention the range of sizes available. This portfolio will provide you with a suitable fitting for every application.

Look for our products from the Core Range ★

Selection aid _____ 82

Additional information:

→ www.festo.com/fitting



Can be used with:

O.D. tubing → 26

	Type, description
	QSM, mini series ★ Miniature push-in fittings/connectors for maximum component density in confined spaces. For pneumatic applications with a temperature range up to 80 °C and a pressure range up to 1.4 MPa. Tubing O.D. of 2, 3, 4 and 6 mm with connecting threads M3, M5, M6, M7, M8 R1/8 and G1/8
	QS, standard series ★ Wide selection of push-in fittings/connectors for pneumatic applications with a temperature range up to 80°C and a pressure range up to 1.4 MPa. Tubing O.D. 4, 6, 8, 10, 12, 16 and 22 mm with connecting thread R1/8 ... R1/2 and G1/8 ... 3/4
	NPQE-F1A, for manufacturing lithium-ion batteries Economical push-in fittings/connectors for pneumatic applications with a temperature range up to 60 °C and a pressure range up to 0.8 MPa. Tubing O.D. 4, 6, 8, 10 and 12 mm with connecting thread M3, M5, M7, G1/8, G1/4, R1/8 and R1/4.
	NPQH, solid metal push-in fitting All-metal push-in fittings/connectors made of chemically nickel-plated brass. High corrosion resistance CRC3 and chemical resistance. For pneumatic applications with a temperature range up to 150 °C and a pressure range up to 2 MPa. Tubing O.D. 4, 6, 8, 10, 12 and 14 mm with connecting threads M5, M7 and G1/8 ... 1/2

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Push-in connector, W-shape	119
Push-in connector, X-shape	119
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Push-in connector, Y-shape	120
Push-in fitting, straight	124
Push-in connector, straight	125
Push-in fitting, L-shape	124
Push-in connector, L-shape	125
Push-in connector, L-shape	125
Push-in connector, Y-shape	126
Push-in fitting, straight	130
Push-in connector, straight	134
Push-in fitting, L-shape	132
Push-in connector, L-shape	135
Push-in fitting, T-shape	133
Push-in connector, L-shape	135
Push-in connector, Y-shape	136

	Type, description
	NPQR, stainless steel Stainless steel push-in fitting/connector. Maximum corrosion resistance CRC 4 and chemical resistance. For pneumatic applications with a temperature range up to 150 °C and a pressure range up to 1.6 MPa. Tubing O.D. 4, 6, 8, 10 and 12 mm with connecting thread M5, M7 and G1/8 ... G1/2
	NPQM, metal Attractively priced metal push-in fitting/connector for pneumatic applications with a temperature range up to 70°C and a pressure range up to 1.6 MPa. Tubing O.D. 3, 4, 6, 8, 10, 12 and 14 mm with connecting thread M5, M7 and G1/8 ... G1/2
	NPQP, resistant to media Polypropylene fitting/connector for use in applications with extreme media influences. For pneumatic applications with a temperature range up to 60 °C and a pressure range up to 1 MPa. Tubing O.D. 4, 6, 8, 10 and 12 mm with connecting thread R1/8 ... R1/2
	NPQX NEW: New series Push-in fittings and plug connectors for pneumatic applications with a temperature range up to 60 °C and a pressure range up to 1 MPa. Push-in fitting, specially developed for the VTUX valve terminal. Tubing O.D. 4, 6, 8, 10, 12 mm Tubing O.D. 1/8, 5/32, 1/4, 5/16, 3/8“
	QS-V0, resistant to welding spatter Flame-retardant push-in fitting/connector for use in all areas where there is a risk of fire, for example welding systems in the automotive industry, and in the construction industry. For pneumatic applications with a temperature range up to 60 °C and a pressure range up to 1 MPa. Tubing O.D. 4, 6, 8, 10 and 12 mm with connecting thread R1/8 ... R1/2 and G1/8 ... G1/2

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Push-in connector, straight	142
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Push-in connector, T-shape	167

	Type, description
	QSP, brass or polyamide Space-saving installation for tight spaces and thread-less mounting for pneumatic applications with a temperature range up to 60 °C and a pressure range up to 1 MPa. Tubing O.D. 3, 4, 6, 8, 10, 12 mm Tubing O.D. 1/8, 5/32, 1/4, 5/16, 3/8, 1/2“
	
	QSK/QSR, self-sealing and rotatable push-in fittings/connectors M and G thread with sealing ring, R thread PTFE-coated. Self-sealing push-in fittings and self-sealing push-in connectors, rotatable push-in fittings. Tubing O.D. 4, 6, 8, 10, 12 mm Connecting thread M5, R1/8 ... R1/2 and G1/8 ... G1/2

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Cartridges, straight shape	170
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Push-in fitting, self-sealing, straight shape	178
Push-in connector, self-sealing, straight	180
Push-in fitting, self-sealing, L-shape	178
Push-in fitting, rotatable, straight shape	181
Push-in fitting, rotatable, L-shape	181



Additional information:

→ www.festo.com/fitting



Push-in fittings/push-in connectors

QSM, mini series ★

Compact push-in fittings for maximum component density in confined spaces. For pneumatic applications with a temperature range up to 80 °C and a pressure range up to 1.4 MPa.

Tubing O.D. of 2, 3, 4 and 6 mm with connecting threads M3, M5, M6, M7, R1/8 and G1/8.

Look for our products from the Core Range ★



Straight shape

90
95



L-shape

92
96



T-shape

93
96



X-shape

97



Y-shape

97

Can be used with:

O.D. tubing → 26

Straight shape

	D1	D2	TNR	PE
QSM – male thread with external hexagon				
	M3	2	133027	10
		3	153301	
		4	★ 153303	10
			130776	100
	M5	2	133028	10
		3	153302	100
			130777	
		4	★ 153304	10
			130778	100
		6	★ 153306	10
			130779	100
		M6	★ 132600	10
	R1/8	4	★ 153305	100
		130755		
		6	★ 153307	10
	G1/8	4	★ 186264	10
		6	★ 186265	

QSM-...-I – male thread with internal hexagon					
	M3	2	133026	10	
		3	153312		
		4	★ 153314		
	M5	3	153313		
		4	★ 153315		
		6	★ 153317		
	M7	4	★ 153319		100
		133006			
		6	★ 153321	10	
	R1/8	4	★ 153316		
		6	★ 153318		
	G1/8	4	★ 186266		
		6	★ 186267		

Straight shape

	D1	D2	TNR	PE
QSM-...-I-R – male thread with internal hexagon				
Round releasing ring				
	M3	3	133001	10
			132914	100
		4	133002	10
			132915	100
	M5	3	133003	10
			132916	100
		4	133004	10
			132917	100
		6	133005	10
			132918	100
M7		133007	10	
		132919	100	
QSMF – female thread with external hexagon				
	M3	3	153308	10
		4	153310	
	M5	3	153309	
		4	153311	
QSMF male thread with internal hexagon				
	M6x0.75	4	153320	10
	M8x0.75	6	153322	
	M8x1.25		154434	

L-shape

	D1	D2	TNR	PE
QSML – male thread with external hexagon 360° rotatable				
	M3	2	133030	10
		3	★ 153330	
			130768	100
		4	★ 153332	10
			130769	100
	M5	2	133031	10
		3	★ 153331	
			130770	100
		4	★ 153333	10
			★ 130771	100
		6	★ 153335	10
			★ 130772	100
	M7	4	★ 186352	10
			130773	100
		6	★ 186353	10
			130774	100
	R1/8	4	★ 153334	10
			130764	100
		6	★ 153336	10
			130765	100
	G1/8	4	★ 186268	10
			132897	100
		6	★ 186269	10
QSMML – long, male thread with external hexagon 360° rotatable				
	M3	2	133032	10
		3	153337	
			133011	100
		4	153338	10
	M5	2	133033	100
		3	130838	
			133012	100
		4	153339	10
			133013	100
		6	153341	10
	M7	4	186354	100
			133014	
		6	186355	10
	R1/8	4	153340	
		6	153342	
	G1/8	4	186270	
		6	186271	

L-shape

	D1	D2	TNR	PE
QSM LV-...-I – male thread with internal hexagon 360° rotatable				
	M5	3	130830	10
		4	130831	
	M7		130832	
		6	130833	
QSM LV-...-I – long, male thread with internal hexagon 360° rotatable				
	M5	3	130834	10
		4	130835	
	M7		130836	
		6	130837	

T-shape

	D1	D2	TNR	PE
QSMT – Male thread with external hexagon				
Rotatable 360°				
	M3	3	153351	10
		4	153353	
	M5	3	153352	100
		4	153354	
			130784	
		6	153356	
			130785	
	R1/8	4	153355	10
		6	153357	
	G1/8	4	186272	
6		186273		

QSMTL – male thread with external hexagon					
360° rotatable					
	M3	3	153358	10	
		4	153360		
	M5	3	153359		
		4	153361		
		6	153363		
	R1/8	4	153362		
		6	153364		
	G1/8	4	186274		
		6	186275		

Accessories

	Size	TNR	PE
QSO – release tool Quick-out releasing tool for QS push-in fittings for tubing O.D. 4 ... 10 mm			
	10	158419	1

Configurable products



This product and all its product options can
be ordered online via the configurator:
www.festo.com/catalogue/qsm



Straight shape

	D1	D2	TNR	PE
QSM – push-in connector				
	3	3	153323	10
			130757	100
	4	4	★ 153324	10
			130758	100
	6	6	★ 153325	10
130759			100	
QSM – push-in connector Reducing				
	3	2	133029	10
	4	3	★ 153326	
			130760	100
	6	4	★ 153327	10
			130761	100
QSMS push-in bulkhead connector				
	3	3	153375	10
	4	4	★ 153376	
			130780	100
	6	6	★ 153377	10
			130781	100
QSMC push-in cap				
	3	–	153381	10
QSM-...H push-in connector with push-in sleeve				
	3	2	133035	10
	4	3	★ 153328	
			130762	100
	6	4	★ 153329	10
			130763	100
QSMC-...H blanking plug				
	2	–	133036	10
	3		153382	

L-shape

	D1	D2	TNR	PE
QSM L – push-in connector				
	3	3	153343	10
	4	4	★ 153344	100
			130766	
	6	6	★ 153345	10
130767			100	
QSM L-...H – Push-in L-connector with push-in sleeve				
	3	3	153346	10
	4	4	★ 153347	
	6	6	★ 153348	
QSM L-...H – Push-in L-connector with push-in sleeve Reducing				
	4	3	153349	10
	6	4	153350	

T-shape

	D1	D2	TNR	PE
QSM – push-in T-connector				
	2	2	133034	10
	3	3	153365	
	4	4	★ 153366	100
			130782	
	6	6	★ 153367	10
			130783	100
QSM – push-in T-connector Reducing				
	4	3	★ 153368	10
	6	4	★ 153369	

X-shape

	D1	D2	TNR	PE
QSMX – Push-in X connector				
	3	3	153378	10
	4	4	153379	
	6	6	153380	

Y-shape

	D1	D2	TNR	PE
QSMY – Push-in Y-connector				
	2	2	133037	10
	3	3	153370	
	4	4	★ 153371	
			130786	100
	6	6	★ 153372	10
			130787	100
QSMY – push-in connector				
Reducing				
	4	3	★ 153373	10
	6	4	★ 153374	

Accessories

	Size	TNR	PE
QSO – release tool			
Quick-out releasing tool for QS push-in fittings for tubing O.D. 4 ... 10 mm			
	10	158419	1



Additional information:

→ www.festo.com/fitting



Push-in fittings/connectors

QS, standard series ★

Wide selection of push-in fittings for pneumatic applications with a temperature range up to 80 °C and a pressure range up to 1.4 MPa.

Tubing O.D. 4, 6, 8, 10, 12, 16 and 22 mm with connecting thread R1/8 ... R1/2 and G1/8 ... 3/4

Look for our products from the Core Range ★

04

Push-in fittings QS, standard series



Straight shape

100**115**

L-shape

104**117**

T-shape

109**118**

W-shape

112**119**

X-shape

119

Y-shape

113**120****Can be used with:**O.D. tubing → **26**

Straight shape

	D1	D2	TNR	PE
QS – male thread with external hexagon				
	R1/8	4	★ 153001	10
			130674	100
		6	★ 153002	10
			130675	100
		8	★ 153004	10
			130676	50
		10	★ 190643	10
	R1/4	4	★ 190644	
		6	★ 153003	
			130677	100
		8	★ 153005	10
			130678	50
		10	★ 153007	10
			130679	50
		12	★ 164980	10
			130680	20
	R3/8	6	★ 190645	10
		8	★ 153006	
			130681	50
		10	★ 153008	10
			130682	50
		12	★ 153009	10
			130683	20
		16	★ 164957	1
	R1/2	10	★ 190646	
			133189	50
		12	★ 153010	1
			130684	20
		16	★ 153011	1
			130685	20

Straight shape

	D1	D2	TNR	PE
QS – male thread with external hexagon				
	G1/8	4	★ 186095	10
			132036	100
		6	★ 186096	10
			132037	100
		8	★ 186098	10
			132038	50
	G1/4	6	★ 186097	10
			132039	100
		8	★ 186099	10
			132040	50
		10	★ 186101	10
			132041	50
		12	★ 186350	10
			132042	20
	G3/8	8	★ 186100	10
			132043	50
		10	★ 186102	10
			132044	50
		12	★ 186103	10
			132045	20
	G1/2	12	★ 186104	1
			132046	20
		16	★ 186105	1
			132047	20
	G3/4	22	8040613	1
QS-...-I – male thread with internal hexagon				
	R1/8	4	★ 153012	10
			133191	100
		6	★ 153013	10
			133186	100
		8	★ 153015	10
			133187	50
		10	★ 190647	10
			133193	100
	R1/4	6	★ 153014	10
			133190	50
		8	★ 153016	10
			133188	50
		10	★ 153018	10
			190649	10
	R3/8	8	★ 153017	1
		10	★ 153019	1
		12	★ 153020	1
	R1/2	10	★ 190648	1
		12	★ 153021	1

Straight shape

	D1	D2	TNR	PE
QS-...-I – male thread with internal hexagon				
	G1/8	4	★ 186106	10
			133008	100
		6	★ 186107	10
			133009	100
		8	★ 186109	10
			133010	100
		10	★ 132999	10
			133000	100
	G1/4	6	★ 186108	10
		8	★ 186110	
		10	★ 186112	
	G3/8	8	★ 186111	
		10	★ 186113	
		12	★ 186114	
	G1/2		★ 186115	1
QSF – female thread with external hexagon				
	G1/8	4	★ 153022	10
			130709	100
		6	★ 153023	10
			130710	100
		8	★ 153025	10
			130711	50
	G1/4	4	★ 190650	10
		6	★ 153024	100
			130712	
		8	★ 153026	10
			130713	50
		10	★ 153028	10
			130714	50
		12	★ 190651	10
	G3/8	6	★ 190652	
		8	★ 153027	
			130715	50
		10	★ 153029	10
			130716	50
		12	★ 153030	10
			130717	20
	G1/2		★ 190653	1
		16	190654	

Straight shape

	D1	D2	TNR	PE
QSSF – Bulkhead push-in fitting with female thread				
	G1/8	4	153162	10
		6	153163	
		8	153165	
	G1/4	4	190655	
		6	153164	
		8	153166	
		10	153168	
	G3/8	6	190656	
		8	153167	
		10	153169	
		12	153170	
	G1/2		153171	1
		16	190657	

L-shape

	D1	D2	TNR	PE
QSL – male thread with external hexagon 360° rotatable				
	R1/8	4	★ 153045	10
			130728	100
		6	★ 153046	10
			★ 130729	100
		8	★ 153048	10
			★ 130730	50
		10	★ 190658	10
	R1/4	4	★ 190659	
		6	★ 153047	
		8	★ 130731	100
			★ 153049	10
		10	130732	50
			★ 153051	10
		12	★ 130733	50
			★ 164981	10
	R3/8	6	★ 130734	20
			★ 190660	10
		8	★ 153050	
			130735	50
		10	★ 153052	10
			130736	20
		12	★ 153053	10
			130737	20
	R1/2	16	★ 164958	1
		10	★ 190661	10
		12	★ 153054	1
			★ 130738	20
		16	★ 153055	1
			★ 130739	20
			133192	50

L-shape

	D1	D2	TNR	PE
QSL – male thread with external hexagon				
360° rotatable				
	G1/8	4	★ 186116	10
			132048	100
		6	★ 186117	10
			132049	100
		8	★ 186119	10
			132050	50
	G1/4	6	★ 186118	10
			132051	100
		8	★ 186120	10
			132052	50
		10	★ 186122	10
			132053	50
		12	★ 186351	10
			132054	20
	G3/8	8	★ 186121	10
			132055	50
		10	★ 186123	10
			132056	20
		12	★ 186124	10
			132057	20
	G1/2	12	★ 186125	
			132058	20
		16	★ 186126	1
			132059	20
QSL – long, male thread with external hexagon				
360° rotatable				
	R1/8	4	153076	10
		6	★ 153077	
		8	★ 153079	
	R1/4	4	190662	
		6	153078	
		8	★ 153080	
		10	153082	
	R3/8	6	190663	
		8	153081	
		10	153083	
		12	153084	
	R1/2	10	190664	1
		12	153085	

L-shape

	D1	D2	TNR	PE	
QSL – long, male thread with external hexagon 360° rotatable					
	G1/8	4	186127	10	
			133015	100	
		6	★ 186128	10	
			133016	100	
	8	★ 186130	10		
		133017	100		
		G1/4	6	186129	10
			8	★ 186131	
	10		186133		
	12		132596		
	G3/8	8	186132		
		10	186134		
		12	186135		
	G1/2		186136	1	
16		190665			
QSLF – Female thread with external hexagon Rotatable 360°					
	G1/8	4	★ 153273	10	
		6	★ 153274		
		8	★ 153276		
	G1/4	6	★ 153275		
		8	★ 153277		
		10	★ 153279		
	G3/8	8	★ 153278		
		10	★ 153280		
QSLV-...-I – male thread with internal hexagon 360° rotatable					
	R1/8	6	153097	10	
		8	153099		
	R1/4	6	153098		
		8	153100		
		10	153102		
	R3/8	8	153101		
		10	153103		
		12	153104		
	R1/2		153105	1	

L-shape

	D1	D2	TNR	PE
QSLV-...-I – male thread with internal hexagon				
360° rotatable				
	G1/8	6	186148	10
		8	186150	
	G1/4	6	186149	
		8	186151	
		10	186153	
	G3/8	8	186152	
		10	186154	
		12	186155	
	G1/2		186156	1
QSLV – male thread with external hexagon				
360° rotatable				
	R1/8	4	153086	10
			130749	100
		6	153087	10
			130750	100
		8	153089	10
			130751	50
	R1/4	6	153088	10
			130752	100
		8	153090	10
			130753	50
		10	153092	10
			130754	50
	R3/8	8	153091	10
		10	153093	
		12	153094	
	R1/2		153095	1
		16	153096	

L-shape

	D1	D2	TNR	PE
QSLV – male thread with internal hexagon 360° rotatable				
	M5	6	190666	10
	G1/8	4	186137	
			132060	100
		6	186138	10
			132061	100
		8	186140	10
			132062	50
	G1/4	6	186139	10
			132063	100
		8	186141	10
			132064	50
		10	186143	10
			132065	50
	G3/8	8	186142	10
		10	186144	
		12	186145	
	G1/2		186146	1
		16	186147	

T-shape

	D1	D2	TNR	PE
QST – male thread with external hexagon 360° rotatable				
	R1/8	4	153106	10
			130793	100
		6	153107	10
			130794	100
		8	153109	10
			130795	50
		10	190667	10
	R1/4	4	190668	
		6	153108	
			130796	100
			153110	10
		8	130797	50
			153112	10
		10	130798	50
			190669	10
	R3/8	6	190670	
		8	153111	
			130799	50
			153113	10
		12	130800	20
			153114	10
		16	130801	20
			164959	1
	R1/2	10	190672	
		12	153115	
		16	153116	

T-shape

	D1	D2	TNR	PE
QST – male thread with external hexagon 360° rotatable				
	G1/8	4	186157	10
			132066	100
		6	186158	10
			132067	100
		8	186160	10
			132068	50
	G1/4	6	186159	10
			132069	100
		8	186161	10
			132070	50
		10	186163	10
			132071	50
		12	132597	1
	G3/8	8	186162	10
			132072	50
		10	186164	10
			132073	20
		12	186165	10
			132074	20
	G1/2	16	186349	1
			186166	
			186167	
QSTF – male and female thread with external hexagon 360° rotatable				
	R1/8	G1/8	153182	1
			153183	
			153185	
	R1/4	G1/4	153184	
			153186	
			153188	
	R3/8	G3/8	153189	
			153190	
			153187	
	R1/2	G1/2	153191	

T-shape

	D1	D2	TNR	PE
QSTF – male and female thread with external hexagon 360° rotatable				
	G1/8	G1/8	186200	1
			186199	
			186202	
	G1/4	G1/4	186201	
			186203	
			186205	
	G3/8	G3/8	186204	
			186206	
			186207	
	G1/2	G1/2	186208	
QSTL – male thread with external hexagon 360° rotatable				
	R1/8	4	153117	10
			130824	100
		6	153118	10
			130825	100
		8	153120	10
			130826	50
	R1/4	6	153119	10
			130827	100
		8	153121	10
			130828	50
		10	153123	10
			130829	50
	R3/8	8	153122	10
		10	153124	
		12	153125	
	R1/2		153126	1
		16	153127	

T-shape

	D1	D2	TNR	PE
QSTL – male thread with external hexagon 360° rotatable				
	G1/8	4	186168	10
			132075	100
		6	186169	10
			132076	100
		8	186171	10
			132077	50
	G1/4	6	186170	10
			132078	100
		8	186172	10
			132079	50
		10	186174	10
			132080	50
	G3/8	8	186173	10
		10	186175	
		12	186176	
	G1/2	16	186177	1
			186178	

W-shape

	D1	D2	TNR	PE
QSW – male thread with external hexagon Rotatable				
	R1/8	4	130596	10
		6	130597	
		8	130598	
	R1/4	6	130599	
		8	130600	
		10	130601	
	R3/8	12	130602	
			130603	
	R1/2	16	130604	1
			130605	

Y-shape

	D1	D2	TNR	PE
QSY – male thread with external hexagon				
Rotatable				
	M5	4	190673	10
		6	190674	
	R1/8	4	153138	
		6	153139	
		8	153141	
	R1/4	4	190675	
		6	153140	
		8	153142	
		10	153144	
	R3/8	8	153143	
		10	153145	
		12	153146	
	R1/2	10	133196	1
		12	153147	
QSY – male thread with external hexagon				
Rotatable				
	G1/8	4	186179	10
		6	186180	
		8	186182	
	G1/4	6	186181	
		8	186183	
		10	186185	
	G3/8	8	186184	
		10	186186	
		12	186187	
	G1/2		186188	1
QSYL – male thread with external hexagon				
Rotatable				
	R1/8	4	153172	1
		6	153173	
		8	153175	
	R1/4	6	153174	
		8	153176	
		10	153178	
	R3/8	8	153177	
		10	153179	
		12	153180	
	R1/2		153181	

Y-shape

	D1	D2	TNR	PE	
QSYL – male thread with external hexagon					
Rotatable					
	G1/8	4	186189	1	
		6	186190		
		8	186192		
	G1/4	6	186191		
		8	186193		
		10	186195		
	G3/8	8	186194		
		10	186196		
		12	186197		
	G1/2		186198		
QSYLV – male thread with external hexagon					
Rotatable					
	R1/8	6	153192	1	
	R1/4	8	153193		
	R3/8	10	153194		
	R1/2	12	153195		
QSYLV – male thread with external hexagon					
Rotatable					
	G1/8	6	186209	1	
	G1/4	8	186210		
	G3/8	10	186211		
	G1/2	12	186212		

Accessories

	Size	TNR	PE
QSO – release tool			
Quick-out releasing tool for QS push-in fittings for tubing O.D. 4 ... 10 mm			
	10	158419	1

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/qs



Straight shape

	D1	D2	TNR	PE
QS – push-in connector				
	4	4	★ 153031	10
			★ 130686	100
	6	6	★ 153032	10
			★ 130687	100
	8	8	★ 153033	10
			★ 130688	50
	10	10	★ 153034	10
			★ 130689	50
	12	12	★ 153035	10
			★ 130690	20
16	16	★ 153036	1	
		133195	20	
QS – push-in connector				
Reducing				
	6	4	★ 153037	10
			130691	100
	8	6	★ 130606	10
			★ 153038	50
	10	8	★ 130692	50
			★ 130607	10
	12	10	★ 153039	50
			★ 130693	50
	12	10	★ 130608	10
			★ 153040	20
12	10	130694	20	
		QSS – push-in bulkhead connector		
	4	4	★ 153157	10
			130788	100
	6	6	★ 153158	10
			130789	100
	8	8	★ 153159	10
			130790	50
	10	10	★ 153160	10
			130791	50
	12	12	★ 153161	10
			130792	20
QSS-...-F – push-in bulkhead connector				
With fixed collar				
	4	4	193950	10
	6	6	193951	
	8	8	★ 130642	
	10	10	130643	
	12	12	130644	

Straight shape

	D1	D2	TNR	PE
QSC – push-in cap				
	4	–	★ 153262	10
			130704	100
	6		★ 153263	10
			130705	100
	8		★ 153264	10
			130706	50
	10		★ 153265	10
			130707	50
	12		★ 153266	10
			130708	20
QS-...H – push-in connector with push-in sleeve				
	6	4	★ 153041	10
			130695	100
	8	6	★ 130622	10
			★ 153042	
			130696	50
	10		★ 130623	10
		8	★ 153043	
			130697	50
	12	6	★ 132981	10
		8	★ 130624	
		10	★ 153044	
			130698	20
QSH – push-in sleeve				
	4	4	153251	10
			130723	100
	6	6	153252	10
			130724	100
	8	8	153253	10
			130725	50
	10	10	153254	10
			130726	50
	12	12	153255	10
			130727	20
	16	16	153256	1

Straight shape

	D1	D2	TNR	PE
QSH – push-in sleeve				
Reducing				
	6	4	153257	10
			130718	100
	8	6	130625	10
			153258	10
	10	8	130719	50
			130626	10
	12	10	153259	10
			130720	50
	16	12	130627	10
			153260	10
			130721	20
			153261	1
		130722	20	
QSC-...H – blanking plug				
	4	–	★ 153267	10
			130699	100
	6		★ 153268	10
			130700	100
	8		★ 153269	10
			130701	50
	10		★ 153270	10
			130702	50
	12		★ 153271	10
			130703	20
	16		153272	1

L-shape

	D1	D2	TNR	PE
QSL – Push-in L-connector				
	4	4	★ 153070	10
			130740	100
	6	6	★ 153071	10
			130741	100
	8	8	★ 153072	10
			130742	50
	10	10	★ 153073	10
			130743	50
	12	12	★ 153074	10
			130744	20
	16	16	★ 153075	1
			133194	20

L-shape

	D1	D2	TNR	PE
QSL-...H – Push-in L-connector with push-in sleeve				
	4	4	★ 153056	10
			130745	100
	6	6	★ 153057	10
			130746	100
	8	8	★ 153058	10
			130747	50
	10	10	★ 153059	10
			130748	50
	12	12	★ 153060	10
QSL-...H – Push-in L-connector with push-in sleeve				
Reducing				
	6	4	★ 153061	10
	8	6	★ 153062	
	10	8	★ 153063	
	12	10	★ 153064	
QSL-...HL – Push-in L-connector with push-in sleeve				
Long push-in sleeve				
	4	4	153065	10
	6	6	153066	
	8	8	153067	
	10	10	153068	
	12	12	153069	

T-shape

	D1	D2	TNR	PE
QST – Push-in T-connector				
	4	4	★ 153128	10
			130802	100
	6	6	★ 153129	10
			★ 130803	100
	8	8	★ 153130	10
			★ 130804	50
	10	10	★ 153131	10
			130805	50
	12	12	★ 153132	10
			130806	20
	16	16	★ 153133	1

T-shape

	D1	D2	TNR	PE
QST – Push-in T-connector				
Reducing				
	6	4	★ 153134	10
			130820	100
	8		★ 130613	10
		6	★ 153135	
			130821	50
	10		★ 130614	10
		8	★ 153136	
			130822	50
	12		★ 130615	10
		10	★ 153137	
			130823	20
	16	12	★ 130616	1

W-shape

	D1	D2	TNR	PE
QSW-...HL push-in connector with push-in sleeve				
	4	4	130617	10
	6	6	130618	
	8	8	130619	
	10	10	130620	
	12	12	130621	

X-shape

	D1	D2	TNR	PE
QSX – Push-in X connector				
	8	8	153285	10
	10	10	153286	
	12	12	153287	

Y-shape

	D1	D2	TNR	PE
QSY – Push-in Y-connector				
	4	4	★ 153148	10
			130807	100
	6	6	★ 153149	10
			★ 130808	100
	8	8	★ 153150	10
			★ 130809	50
	10	10	★ 153151	10
			130810	20
	12	12	★ 153152	10
			130811	20
16	16	★ 130609	1	
QSY – Push-in Y-connector Reducing				
	6	4	★ 153153	10
			130812	100
	8	6	★ 130610	10
			★ 153154	
	10	8	★ 130813	50
			★ 130611	10
	12	10	★ 153155	
			★ 130814	20
	16	12	★ 130612	10
			★ 153156	
		130815	20	
		★ 190708	1	
QSY-...H – Push-in Y-connector with push-in sleeve				
	4	4	130628	10
	6	6	133145	
	8	8	133146	
	10	10	133148	
	12	12	133150	
QSY-...H – Push-in Y-connector with push-in sleeve Reducing				
	6	4	130633	10
	8	6	133147	
	10	8	133149	
	12	10	133151	

Accessories

	Size	TNR	PE
QSO – release tool Quick-out releasing tool for QS push-in fittings for tubing O.D. 4 ... 10 mm			
	10	158419	1



Additional information:

→ www.festo.com/fitting



Push-in fittings/connectors

NPQE-F1A for manufacturing lithium-ion batteries

Economical push-in fittings for pneumatic applications with a temperature range up to 60 °C and a pressure range up to 0.8 MPa.
Tubing O.D. 4, 6, 8, 10 and 12 mm with connecting thread M3, M5, M7, G1/8, G1/4, R1/8 and R1/4



Straight shape

124
125



L-shape

124
125



T-shape

125



Y-shape

126

Can be used with:

O.D. tubing → 26

Straight shape

	D1	D2	TNR	PE
NPQE-DK-F1A – male thread with internal hexagon Recommended for production facilities for manufacturing lithium-ion batteries				
	M3	4	8158773	10
	M5		8144595	
		6	8144596	
	M7	4	8144597	
		6	8144598	
	G1/8	4	8144599	
		6	8144600	
		8	8144601	
		10	8144602	
	G1/4	6	8144603	
		8	8144604	
		10	8144605	
		12	8144606	

L-shape

	D1	D2	TNR	PE
NPQE-L-F1A – male thread with external hexagon Recommended for production facilities for manufacturing lithium-ion batteries				
	M3	4	8158774	10
	M5		8158775	
		6	8158776	
	M7	4	8158777	
		6	8158778	
	R1/8	4	8158779	
		6	8158780	
		8	8158781	
		10	8158782	
	R1/4	6	8158783	
		8	8158784	
		10	8158785	
		12	8158786	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/npqe-f1a



Straight shape

	D1	D2	TNR	PE
NPQE-D-F1A – push-in connector Recommended for production facilities for manufacturing lithium-ion batteries				
	4	4	8158787	10
	6	6	8158789	
	8	8	8158791	
	10	10	8158793	
	12	12	8158795	
NPQE-D-F1A – push-in connector Reducing Recommended for production facilities for manufacturing lithium-ion batteries				
	6	4	8158788	10
	8	6	8158790	
	10	8	8158792	
	12	10	8158794	

L-shape

	D2	D1	TNR	PE
NPQE-L-F1A – Push-in L-connector Recommended for production facilities for manufacturing lithium-ion batteries				
	4	4	8158796	10
	6	6	8158797	
	8	8	8158798	
	10	10	8158799	

T-shape

	D1	D2	TNR	PE
NPQE-T-F1A – Push-in T-connector Recommended for production facilities for manufacturing lithium-ion batteries				
	4	4	8158800	10
	6	6	8158801	
	8	8	8158802	
	10	10	8158803	

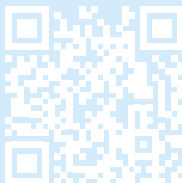
Y-shape

	D1	D2	TNR	PE
NPQE-Y-F1A – Push-in Y-connector Recommended for production facilities for manufacturing lithium-ion batteries				
	4	4	8158804	10
	6	6	8158805	
	8	8	8158806	
	10	10	8158807	

04

Push-in connectors NPQE-F1A

→ www.festo.com/support





Additional information:

→ www.festo.com/fitting



Push-in fittings/connectors

NPQH, solid metal

All metal push-in fitting/connectors made of chemically nickel-plated brass. High corrosion resistance CRC3 and chemical resistance. For pneumatic applications with a temperature range up to 150 °C and a pressure range up to 2 MPa.

Tubing O.D. 4, 6, 8, 10, 12 and 14 mm with connecting threads M5, M7 and G1/8 ... 1/2

	Straight shape	130
		134
	L-shape	132
		135
	T-shape	133
		135
	Y-shape	136

Can be used with:

O.D. tubing → 26

Straight shape

	D1	D2	TNR	PE
NPQH-D – male thread with external hexagon				
With sealing ring				
	M5	4	578334	10
		6	578335	
	M7	4	578336	
		6	578337	
	G1/8	4	578338	
		6	578339	
		8	578340	
	G1/4	6	578341	
		8	578342	
		10	578343	
		12	578344	
	G3/8	8	578345	
		10	578346	
		12	578347	
		14	578348	
	G1/2	10	578349	
12		578350		
14		578351		
NPQH-D-...F – female thread with external hexagon				
With sealing ring				
	G1/8	4	578352	10
		6	578353	
		8	578354	
	G1/4	4	578355	
		6	578356	
		8	578357	
NPQH-D-...S... – with push-in sleeve				
With sealing ring				
	M5	4	578358	10
		6	578359	
	G1/8	4	578360	
		6	578361	
		8	578362	
	G1/4	6	578363	
		8	578364	
		10	578365	
		12	578366	
	G3/8	10	578367	
		12	578368	
	G1/2		578369	

Straight shape

	D1	D2	TNR	PE
NPQH-DK – male thread with internal hexagon				
With sealing ring				
	M5	4	578370	10
		6	8114987	
	M7	4	578372	
		6	8114986	
	G1/8	4	578374	
		6	578375	
		8	578376	
		10	8114985	
	G1/4	8	578377	
		10	578378	
G3/8	12	578379		
NPQH-H – push-in bulkhead fitting, female thread with external hexagon				
	G1/8	4	578294	10
		6	578295	
		8	578296	
	G1/4	6	578297	
		8	578298	
NPQH-BK – plug screw				
With sealing ring				
	M5	–	578404	10
	M7		578405	
	G1/8		578406	
	G1/4		578407	
	G3/8		578408	
	G1/2		578409	

L-shape

	D1	D2	TNR	PE
NPQH-L – male thread with external hexagon				
360° rotatable, with sealing ring				
	M5	4	578276	10
		6	578277	
	M7	4	578278	
		6	578279	
	G1/8	4	578280	
		6	578281	
		8	578282	
	G1/4	6	578283	
		8	578284	
		10	578285	
		12	578286	
	G3/8	8	578287	
		10	578288	
		12	578289	
		14	578290	
	G1/2	10	578291	
		12	578292	
		14	578293	

NPQH-LL – long, male thread with external hexagon				
360° rotatable, with sealing ring				
	G1/8	4	578263	10
		6	578264	
		8	578265	
	G1/4	6	578266	
		8	578267	
		10	578268	
	G3/8		578269	

T-shape

	D1	D2	TNR	PE
NPQH-T – male thread with external hexagon				
360° rotatable				
	M5	4	578390	10
		6	578391	
	G1/8	4	578392	
		6	578393	
		8	578394	
	G1/4	6	578395	
		8	578396	
		10	578397	
		12	578398	
	G3/8	8	578399	
		10	578400	
		12	578401	
	G1/2	10	578402	
		12	578403	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/npqh



Straight shape

	D1	D2	TNR	PE
NPQH-D – push-in connector				
	4	4	578323	10
	6	6	578324	
	8	8	578325	
	10	10	578326	
	12	12	578327	
	14	14	578328	
NPQH-D – push-in connector				
Reducing				
	6	4	578329	10
	8	6	578330	
	12	8	578331	
	14	10	578332	
		12	578333	
NPQH-D – push-in connector with push-in sleeve				
	6	4	578304	10
	8		578305	
		6	578306	
	10	4	578307	
		6	578308	
		8	578309	
	12	6	578310	
		8	578311	
		10	578312	
	14	6	578313	
		8	578314	
		10	578315	
		12	578316	
NPQH-D – push-in sleeve				
	4	4	578317	10
	6	6	578318	
	8	8	578319	
	10	10	578320	
	12	12	578321	
	14	14	578322	
NPQH-H – push-in bulkhead connector				
	4	4	578299	10
	6	6	578300	
	8	8	578301	
	10	10	578302	
	12	12	578303	

Straight shape

	D1	D2	TNR	PE
NPQH-P – blanking plug				
	4	–	578257	10
	6		578258	
	8		578259	
	10		578260	
	12		578261	
	14		578262	

L-shape

	D1	D2	TNR	PE
NPQH-L – Push-in L-connector				
	4	4	578270	10
	6	6	578271	
	8	8	578272	
	10	10	578273	
	12	12	578274	
	14	14	578275	

T-shape

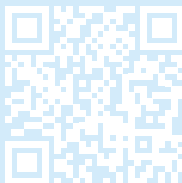
	D1	D2	TNR	PE
NPQH-T – Push-in T-connector				
	4	4	578380	10
	6	6	578381	
	8	8	578382	
	10	10	578383	
	12	12	578384	
	14	14	578385	
NPQH-T – Push-in T-connector Reducing				
	6	4	578386	10
	8	6	578387	
	10	8	578388	
	12	10	578389	

Y-shape

	D1	D2	TNR	PE
NPQH-Y – Push-in Y-connector				
	6	6	578410	10
	8	8	578411	
	10	10	578412	
NPQH-Y – Push-in Y-connector Reducing				
	6	4	578413	10
	8	6	578414	
	10	8	578415	

04
Push-in connector NPQH, solid metal

→ www.festo.com/service2see





Additional information:

→ www.festo.com/fitting



Push-in fittings/connectors

NPQR, stainless steel

Stainless steel push-in fitting. Maximum corrosion resistance CRC 4 and chemical resistance. For pneumatic applications with a temperature range up to 150 °C and a pressure range up to 1.6 MPa. Tubing O.D. 4, 6, 8, 10 and 12 mm with connecting thread M5, M7 and G1/8 ... G1/2

04

Push-in fittings NPQR, stainless steel



Straight shape

140
142


L-shape

141
142


T-shape

141
143


Y-shape

143

Can be used with:

O.D. tubing → **26**

Straight shape

	D1	D2	TNR	PE
NPQR-DK – male thread with internal hexagon				
With sealing ring				
	M5	4	8085657	1
		6	8085659	
	M7	4	8085658	
		6	8085660	
	G1/8	4	8085661	
		6	8085662	
		8	8085663	
		10	8087695	
	G1/4	6	8085664	
		8	8085665	
		10	8085666	
	G3/8	8	8086953	
		10	8085667	
		12	8085668	
	G1/2		8085669	
		14	8085670	
		16	8085671	
NPQR-BK – plug screw				
With sealing ring				
	M5	–	8104803	1
	M7		8085672	
	G1/8		8085673	
	G1/4		8085674	
	G3/8		8085675	
	G1/2		8085676	

L-shape

	D1	D2	TNR	PE
NPQR-L – male thread with external hexagon Rotatable 360°, with sealing ring				
	M5	4	8085679	1
		6	8098626	
	G1/8	4	8085680	
		6	8085681	
		8	8085682	
	G1/4	6	8085683	
		8	8085684	
		10	8085685	
	G3/8		8085686	
		12	8085687	
	G1/2		8085688	
		14	8085689	
		16	8085690	

T-shape

	D1	D2	TNR	PE
NPQR-T – male thread with external hexagon Rotatable 360°, with sealing ring				
	M5	4	8085691	1
		6	8099103	
	G1/8		8085692	
		8	8085693	
	G1/4		8085694	
		10	8099100	
	G3/8		8085695	
		12	8099101	
	G1/2		8099102	
		16	8085696	

Configurable products



This product and all its product options can
be ordered online via the configurator:
www.festo.com/catalogue/npqr



Straight shape

	D1	D2	TNR	PE
NPQR-D – push-in connector				
	4	4	8085697	1
	6	6	8085698	
	8	8	8085699	
	10	10	8085700	
	12	12	8085701	
	14	14	8085702	
	16	16	8085703	
NPQR-D – push-in connector Reducing				
	6	4	8085704	1
	8	6	8085705	
	10	8	8085706	
	12	10	8085707	
	16	12	8085708	
NPQR-H – push-in bulkhead connector				
	4	4	8085729	1
	6	6	8085730	
	8	8	8085731	
	10	10	8085732	
	12	12	8085733	
	16	16	8099104	

L-shape

	D1	D2	TNR	PE
NPQR-L – Plug connector				
	4	4	8085709	1
	6	6	8085710	
	8	8	8085711	
	10	10	8085712	
	12	12	8085713	
	14	14	8085714	
	16	16	8085715	

T-shape

	D1	D2	TNR	PE
NPQR-T – Plug connector				
	4	4	8085716	1
	6	6	8085717	
	8	8	8085718	
	10	10	8085719	
	12	12	8085720	
	14	14	8085721	
	16	16	8085722	

Y-shape

	D1	D2	TNR	PE
NPQR-Y – Push-in Y-connector				
	4	4	8085723	1
	6	6	8085724	
	8	8	8085725	
	10	10	8085726	
	12	12	8085727	
	16	16	8085728	



Additional information:

→ www.festo.com/fitting



Push-in fittings/connectors

NPQM, metal

Attractively priced metal push-in fitting for pneumatic applications with a temperature range up to 70°C and a pressure range up to 1.6 MPa.

Tubing O.D. 3, 4, 6, 8, 10, 12 and 14 mm with connecting thread M5, M7 and G1/8 ... G1/2

	Straight shape	146
		149
	L-shape	146
		150
	T-shape	148
		150
	Y-shape	150

Can be used with:

O.D. tubing → 26

Straight shape

	D1	D2	TNR	PE
NPQM-D – male thread with internal/external hexagon				
With sealing ring				
	G1/8	4	558661	10
		6	558662	
		8	558663	
	G1/4	6	558664	
		8	558665	
		10	558666	
		12	558667	
	G3/8	8	558668	
		10	558669	
		12	558670	
		14	570450	
	G1/2	10	558671	
12		558672		
14		570451		
NPQM-D – female thread with external hexagon				
	G1/8	4	558674	10
		6	558675	
		8	558676	
	G1/4	6	558678	
		8	558679	
		10	558680	
NPQM-DK – male thread with external hexagon				
	M5	4	558657	10
		6	558658	
	M7	4	558659	
		6	558660	

L-shape

	D1	D2	TNR	PE
NPQM-L – male thread with external hexagon				
With sealing ring				
	M5	4	558704	10
		6	558705	

L-shape

	D1	D2	TNR	PE
NPQM-L – male thread with external hexagon				
With sealing ring				
	G1/8	4	558708	10
		6	558709	
		8	558710	
	G1/4	6	558711	
		8	558712	
		10	558713	
		12	558714	
	G3/8	8	558715	
		10	558716	
		12	558717	
		14	570460	
	G1/2	10	558718	
12		558719		
14		570461		
NPQM-LK – male thread with internal hexagon				
With sealing ring				
	M5	3	558816	10
		4	558817	
NPQM-LK – male thread with internal hexagon				
With sealing ring				
	G1/8	4	558818	10
		6	558819	
		8	558820	
	G1/4	6	558821	
		8	558822	
		10	558823	
	G3/8		558825	
NPQM-LH – male thread with external hexagon				
With sealing ring				
	M5	4	558827	10
		6	558828	

L-shape

	D1	D2	TNR	PE
NPQM-LH – male thread with external hexagon				
With sealing ring				
	G1/8	4	558829	10
		6	558830	
		8	558831	
	G1/4	6	558832	
		8	558833	
	G3/8		558834	
		10	558835	
		12	558836	
		NPQM-LFK – multiple distributor, male thread with internal hexagon		
	G1/8	4	558837	10
		6	558838	
		8	558839	
	G1/4	6	558840	
		8	558841	

T-shape

	D1	D2	TNR	PE
NPQM-T – male thread with external hexagon				
With sealing ring				
	G1/8	4	558736	10
		6	558737	
		8	558738	
	G1/4	6	558739	
		8	558740	
		10	558741	
	G3/8	8	558743	
		10	558744	
		12	558745	
	G1/2		558747	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/npqm



Straight shape

	D1	D2	TNR	PE
NPQM-D – push-in connector				
	4	4	558760	10
	6	6	558761	
	8	8	558762	
	10	10	558763	
	12	12	558764	
	14	14	570452	
NPQM-D – push-in connector with push-in sleeve				
	4	6	558767	10
	6	4	558765	
		8	558771	
	8	4	558766	
		6	558768	
	10		558769	
		8	558772	
	12	6	558770	
		8	558773	
		10	558774	
	14	6	570457	
		8	570458	
		10	570456	
		12	570459	
NPQM-D - push-in sleeve				
	4	4	558811	10
	6	6	558812	
	8	8	558813	
	10	10	558814	
	12	12	558815	
	14	14	570455	
NPQM-H – push-in bulkhead connector				
	4	4	558806	10
	6	6	558807	
	8	8	558808	
	10	10	558809	
	12	12	558810	

L-shape

	D1	D2	TNR	PE
NPQM-L – Push-in L-connector				
	4	4	558776	10
	6	6	558777	
	8	8	558778	
	10	10	558779	
	12	12	558780	
	14	14	570453	
NPQM-L – Push-in L-connector with push-in sleeve				
	4	4	558781	10
	6	6	558782	
	8	8	558783	
	10	10	558784	

T-shape

	D1	D2	TNR	PE
NPQM-T – Push-in T-connector				
	4	4	558786	10
	6	6	558787	
	8	8	558788	
	10	10	558789	
	12	12	558790	
	14	14	570454	
NPQM-T – Push-in T-connector with push-in sleeve				
	4	4	558791	10
	6	6	558792	
	8	8	558793	
	10	10	558794	

Y-shape

	D1	D2	TNR	PE
NPQM-Y – Push-in Y-connector				
	4	4	558798	10
	6	6	558799	
	8	8	558800	
	10	10	558801	
	12	12	558802	

Y-shape

	D1	D2	TNR	PE
NPQM-Y – Push-in Y-connector				
Reducing				
	6	4	558803	10
	8	6	558804	
	10	8	558805	



Additional information:

→ www.festo.com/fitting



Push-in fittings/connectors

NPQP, resistant to media

Polypropylene fitting for use in applications with extreme media influences.

For pneumatic applications with a temperature range up to 60 °C and a pressure range up to 1 MPa.

Tubing O.D. 4, 6, 8, 10 and 12 mm with connecting thread R1/8 ... R1/2

04

Push-in fittings NPQP, media-resistant



Straight shape

154
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L-shape

154
157

T-shape

155
157

Y-shape

155
157**Can be used with:**O.D. tubing → **26**

Straight shape

	D1	D2	TNR	PE
NPQP-D – male thread with external hexagon				
	R1/8	4	133041	10
		6	133043	
		8	133045	
	R1/4	4	133042	
		6	133044	
		8	133046	
		10	133047	
	R3/8		133048	
		12	133049	
	R1/2		133050	1

L-shape

	D1	D2	TNR	PE
NPQP-L – male thread with external hexagon				
	R1/8	4	133051	10
		6	133053	
		8	133055	
	R1/4	4	133052	
		6	133054	
		8	133056	
		10	133057	
	R3/8		133058	
		12	133059	
	R1/2		133060	1
NPQP-LQ – male thread with external hexagon				
	R1/8	4	133061	10
		6	133063	
		8	133065	
	R1/4	4	133062	
		6	133064	
		8	133066	
		10	133067	
	R3/8		133068	
		12	133069	
	R1/2		133070	1

T-shape

	D1	D2	TNR	PE
NPQP-T – male thread with external hexagon				
	R1/8	4	133071	10
		6	133073	
		8	133075	
	R1/4	4	133072	
		6	133074	
		8	133076	
		10	133077	
	R3/8		133078	
		12	133079	
	R1/2		133080	1

Y-shape

	D1	D2	TNR	PE
NPQP-Y – male thread with external hexagon				
	R1/8	4	133081	10
		6	133083	
		8	133085	
	R1/4	4	133082	
		6	133084	
		8	133086	
		10	133087	
	R3/8		133088	
		12	133089	
	R1/2		133090	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/npqp



Straight shape

	D1	D2	TNR	PE
NPQP-D – push-in connector				
	4	4	133091	10
	6	6	133092	
	8	8	133093	
	10	10	133094	
	12	12	133095	
NPQP-D – push-in connector Reducing				
	6	4	133096	10
	8	6	133097	
	10	8	133098	
	12	10	133099	
NPQP-H – push-in bulkhead connector				
	4	4	133100	1
	6	6	133101	
	8	8	133102	
	10	10	133103	
	12	12	133104	
NPQP-D – push-in connector with push-in sleeve				
	6	4	133133	10
	8		133134	
	10	6	133135	
		8	133136	
	12	8	133137	
		10	133138	
NPQP-P – blanking plug				
	4	–	133128	10
	6		133129	
	8		133130	
	10		133131	
	12		133132	

L-shape

	D1	D2	TNR	PE
NPQP-L – Push-in L-connector				
	4	4	133105	10
	6	6	133106	
	8	8	133107	
	10	10	133108	
	12	12	133109	

T-shape

	D1	D2	TNR	PE
NPQP-T – Push-in T-connector				
	4	4	133110	10
	6	6	133111	
	8	8	133112	
	10	10	133113	
	12	12	133114	
NPQP-T – Push-in T-connector Reducing				
	6	4	133115	10
	8	6	133116	
	10	8	133117	
	12	10	133118	

Y-shape

	D1	D2	TNR	PE
NPQP-Y – Push-in Y-connector				
	4	4	133119	10
	6	6	133120	
	8	8	133121	
	10	10	133122	
	12	12	133123	
NPQP-Y – Push-in Y-connector Reducing				
	6	4	133124	10
	8	6	133125	
	10	8	133126	
	12	10	133127	



Additional information:

→ www.festo.com/fitting



Cartridges

NPQX**NEW:** New series

Push-in fittings and plug connectors for pneumatic applications with a temperature range up to 60 °C and a pressure range up to 1 MPa.

Push-in fitting, specially developed for the VTUX valve terminal.

Tubing O.D. 4, 6, 8, 10, 12 mm

Tubing O.D. 1/8, 5/32, 1/4, 5/16, 3/8"

04

Cartridges NPQX



Straight shape

160**Can be used with:**O.D. tubing → **26**

Straight shape

	D1	D2	TNR	PE
NPQX-D - Cartridge				
Reinforced polyamide				
	Cartridge 10 mm	5/32"	8184509	10
	Cartridge 12 mm	5/16"	8184513	
		5/32"	8184512	
	Cartridge 15 mm	5/16"	8184515	
		3/8"	8189810	
	Cartridge 10 mm	1/4"	8184510	
		1/8"	8184511	
	Cartridge 12 mm	1/4"	8184514	
		4	8174166	
	Cartridge 10 mm		8174164	
		6	8174165	
	Cartridge 12 mm		8174167	
		Cartridge 15 mm	8	
	Cartridge 12 mm			
Cartridge 15 mm	10	8174170		
NPQX-D – Cartridge				
Aluminium				
	Cartridge 15 mm	12	8174171	10

Straight shape

	D1	D2	TNR	PE
NPQX-P – blanking plug Reinforced polyamide				
	Cartridge 15 mm	–	8191751	1
	Cartridge 12 mm	–	8191750	

Configurable products



This product and all its product options can
be ordered online via the configurator:
www.festo.com/catalogue/npqx





Additional information:

→ www.festo.com/fitting



Push-in fittings/connectors

QS-V0, resistant to welding spatter

Flame-retardant push-in fitting for use in all areas where there is a risk of fire, for example welding systems in the automotive industry, and in the construction industry. For pneumatic applications with a temperature range up to 60 °C and a pressure range up to 1 MPa. Tubing O.D. 4, 6, 8, 10 and 12 mm with connecting thread R1/8 ... R1/2 and G1/8 ... G1/2

04

Push-in fittings QS-V0, resistant to welding spatter



Straight shape

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L-shape

164
167



T-shape

165
167

Can be used with:

O.D. tubing → 26

Straight shape

	D1	D2	TNR	PE
QS-V0 – male thread with external hexagon				
G thread with sealing ring				
	R1/8	4	132888	10
		6	160500	
		8	160501	
	R1/4	6	160502	
		8	160503	
		10	160504	
		12	160505	1
	R3/8	8	160506	10
		10	160507	
		12	160508	
	R1/2	10	160509	
		12	160510	
QS-V0 – male thread with external hexagon				
With sealing ring				
	G1/8	6	186314	10
		8	186315	
	G1/4	6	186316	
		8	186317	
		10	186318	
		12	186319	1
	G3/8	8	186320	10
		10	186321	
		12	186322	
	G1/2	10	186323	
		12	186324	

L-shape

	D1	D2	TNR	PE
QSL-V0 – male thread with external hexagon Rotatable 360°				
	R1/8	4	132891	10
		6	160511	
		8	160512	
	R1/4	6	160513	
		8	160514	
		10	160515	
		12	160516	1
	R3/8	8	160517	10
		10	160518	
		12	160519	
	R1/2	10	160520	1
		12	160521	

L-shape

	D1	D2	TNR	PE
QSL-V0 – male thread with external hexagon Rotatable 360°, with sealing ring				
	G1/8	6	186325	10
		8	186326	
	G1/4	6	186327	
		8	186328	
		10	186329	
		12	186330	1
	G3/8	8	186331	10
		10	186332	
		12	186333	1
	G1/2	10	186334	
		12	186335	

T-shape

	D1	D2	TNR	PE
QST-V0 – male thread with external hexagon				
Rotatable 360°				
	R1/8	4	132894	1
		6	160522	10
		8	160523	
	R1/4	6	160524	
		8	160525	
		10	160526	
		12	160527	1
	R3/8	8	160528	10
		10	160529	
		12	160530	1
	R1/2	10	160531	
		12	160532	

QST-V0 – male thread with external hexagon				
Rotatable 360°				
	G1/8	6	186336	10
	G1/4		186338	
		8	186339	
			186337	
		10	186340	
		12	186341	1
	G3/8	8	186342	10
		10	186343	
		12	186344	1
	G1/2	10	186345	
		12	186346	

Accessories

	Size	TNR	PE
QSO – release tool Quick-out releasing tool for QS push-in fittings for tubing O.D. 4 ... 10 mm			
	10	158419	1

Configurable products



This product and all its product options can
be ordered online via the configurator:
www.festo.com/catalogue/qs-v0



Straight shape

	D1	D2	TNR	PE
QS-V0 – push-in connector G thread with sealing ring				
	4	4	132890	10
	6	6	160546	
	8	8	160547	
	10	10	160548	
	12	12	160549	1

L-shape

	D1	D2	TNR	PE
QSL-V0 – Push-in L-connector				
	4	4	132893	1
	6	6	160540	10
	8	8	160541	
	10	10	160542	
	12	12	160543	1

T-shape

	D1	D2	TNR	PE
QST-V0 – Push-in T-connector				
	4	4	132896	10
	6	6	160533	
	8	8	160534	
	10	10	160535	
	12	12	160536	1

Accessories

	Size	TNR	PE
QSO – release tool Quick-out releasing tool for QS push-in fittings for tubing O.D. 4 ... 10 mm			
	10	158419	1



Additional information:

→ www.festo.com/fitting



Cartridges

QSP

Space-saving installation for tight spaces and threadless mounting for pneumatic applications with a temperature range up to 60 °C and a pressure range up to 1 MPa.

Tubing O.D. 3, 4, 6, 8, 10, 12 mm

Tubing O.D. 1/8, 5/32, 1/4, 5/16, 3/8, 1/2"

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Cartridges QSP



Straight shape

170

L-shape

172

Can be used with:

O.D. tubing → **26**

Straight shape

	D1	D2	TNR	PE
QSP10 – cartridge Nickel-plated brass				
	Cartridge 10 mm	4	172972	10
		6	172973	
QSPKG – cartridge Polyamide reinforced				
	Cartridge 10 mm	3	132621	10
		4	132622	
	Cartridge 14 mm	6	132930	
			132623	
	Cartridge 10 mm	8	132633	
	Cartridge 20 mm		132649	
	Cartridge 18 mm		132931	
	Cartridge 14 mm		132634	
	Cartridge 20 mm	10	132650	
	Cartridge 18 mm		132635	
Cartridge 20 mm	12			

Straight shape

	D1	D2	TNR	PE
QSPK – cartridge Polyamide reinforced				
	Cartridge 10 mm	3	132978	10
	Cartridge 18 mm	4	130839	
	Cartridge 10 mm		132979	
	Cartridge 18 mm	6	130840	
	Cartridge 10 mm		132980	
	Cartridge 18 mm	8	130841	
		10	130842	
QSPKG, NPT – cartridge Polyamide reinforced				
	Cartridge 10 mm	1/8"	132852	10
		1/4"	132626	
	Cartridge 20 mm	5/16"	132636	
	Cartridge 18 mm	3/8"	132652	
	Cartridge 20 mm		132637	
	Cartridge 18 mm	5/16"	132651	
	Cartridge 20 mm	1/2"	132638	
	Cartridge 10 mm	5/32"	132624	
	Cartridge 14 mm	1/4"	132932	
		5/16"	132933	

L-shape

	D1	D2	TNR	PE
QSPLKG – cartridge Polyamide reinforced				
	Cartridge 10 mm	3	132853	10
		4	132920	
		6	132921	
	Cartridge 14 mm		132938	
	Cartridge 18 mm	8	132946	
	Cartridge 14 mm		132939	
	Cartridge 20 mm		132855	
	Cartridge 18 mm	10	132947	
	Cartridge 20 mm		132856	
			12	
QSPLLKG – cartridge, long Polyamide reinforced				
	Cartridge 10 mm	3	132861	10
		4	132925	
		6	132926	
	Cartridge 14 mm		132942	
	Cartridge 20 mm	8	132863	
	Cartridge 18 mm		132950	
	Cartridge 14 mm		132943	
	Cartridge 20 mm	10	132864	
	Cartridge 18 mm		132951	
	Cartridge 20 mm	12	132865	

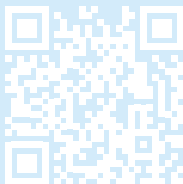
L-shape

	D1	D2	TNR	PE
QSPLK – cartridge Polyamide reinforced				
	Cartridge 18 mm	4	130843	10
	Cartridge 10 mm		132601	
	Cartridge 18 mm	6	130844	
	Cartridge 10 mm		132602	
	Cartridge 18 mm	8	130845	
	10	132639		
QSPLLK – cartridge, long Polyamide reinforced				
	Cartridge 18 mm	4	130846	10
	Cartridge 10 mm		132603	
	Cartridge 18 mm	6	130847	
	Cartridge 10 mm		132604	
	Cartridge 18 mm	8	130848	
	10	132640		

L-shape

	D1	D2	TNR	PE
QSPLKG, NPT – cartridge Polyamide reinforced				
	Cartridge 20 mm	1/2"	132860	10
		3/8"	132859	
	Cartridge 14 mm	1/4"	132940	
	Cartridge 18 mm	5/16"	132948	
			132941	
	Cartridge 14 mm			
	Cartridge 10 mm	1/8"	132854	
	Cartridge 18 mm	3/8"	132949	
Cartridge 10 mm	1/4"	132924		
QSPLLKG, NPT – cartridge, long Polyamide reinforced				
	Cartridge 10 mm	1/8"	132862	10
		1/4"	132929	
	Cartridge 14 mm		132944	
	Cartridge 18 mm	5/16"	132952	
			132945	
	Cartridge 14 mm			
Cartridge 18 mm	3/8"	132953		
QSPLK, NPT – cartridge Polyamide reinforced				
	Cartridge 18 mm	3/8"	132641	10

→ www.festo.com/support





Additional information:

→ www.festo.com/fitting



Self-sealing/rotatable push-in fittings/connectors

QSK/QSMKL/QSR

M and G thread with sealing ring, R thread with PTFE coating

Self-sealing push-in fittings and self-sealing push-in connectors, rotatable push-in fittings.

Tubing O.D. 4, 6, 8, 10, 12 mm

Thread connection M5, R1/8, R1/4, R3/8, R1/2, G1/8, G1/4, G3/8, G1/2

04

Self-sealing/rotary push-in fittings QSK/QSR



Push-in fitting, self-sealing, straight shape **178**

Push-in connector, self-sealing, straight shape **180**



Push-in fitting, self-sealing, L-shape **178**



Push-in fitting, rotatable, straight shape **181**



Push-in fitting, rotatable, L-shape **181**

Can be used with:

O.D. tubing → 26

Straight shape

	D1	D2	TNR	PE
QSMK – male thread with external hex				
With sealing ring				
	M5	4	153291	1
		6	153292	
QSK/QSMK – male thread with external hex				
	R1/8	4	153419	1
		6	153420	
		8	153422	
	R1/4	6	153421	
		8	153423	
		10	153425	
	R3/8	8	153424	
		10	153426	
		12	153427	
	R1/2		153428	
QSK/QSMK – male thread with external hex				
With sealing ring				
	G1/8	4	186294	1
		6	186295	
		8	186297	
	G1/4	6	186296	
		8	186298	
		10	186300	
	G3/8	8	186299	
		10	186301	
		12	186302	
	G1/2		186303	

L-shape

	D1	D2	TNR	PE
QSMKL – male thread with external hexagon Rotatable 360°, with sealing ring				
	M5	4	153294	1
		6	153295	

L-shape

	D1	D2	TNR	PE
QSKL/QSMKL – male thread with external hex				
Rotatable 360°				
	R1/8	4	153429	1
		6	153430	
		8	153432	
	R1/4	6	153431	
		8	153433	
		10	153435	
	R3/8	8	153434	
		10	153436	
		12	153437	
	R1/2		153438	
QSKL/QSMKL – male thread with external hex				
Rotatable 360°, with sealing ring				
	G1/8	4	186304	1
		6	186305	
		8	186307	
	G1/4	6	186306	
		8	186308	
		10	186310	
	G3/8	8	186309	
		10	186311	
		12	186312	
	G1/2		186313	

Accessories

	Size	TNR	PE
QSO – release tool Quick-out releasing tool for QS push-in fittings for tubing O.D. 4 ... 10 mm			
	10	158419	1

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/qs



Straight shape

	D1	D2	TNR	PE
QSK/QSMK – push-in connector, self-sealing				
	4	4	153439	1
	6	6	153440	
	8	8	153441	
	10	10	153442	
	12	12	153443	
QSSK – push-in bulkhead connector, self-sealing				
	4	4	130637	1
	6	6	130638	
	8	8	130639	
	10	10	130640	
	12	12	130641	

Accessories

	Size	TNR	PE
QSO – release tool Quick-out releasing tool for QS push-in fittings for tubing O.D. 4 ... 10 mm			
	10	158419	1

Straight shape

	D1	D2	TNR	PE
QSR – male thread with external hexagon Rotatable 360°, with ball bearing, with sealing ring				
	M5	4	153526	1
		6	153527	
QSR – Male thread with external hexagon Rotatable 360°, with ball bearing				
	R1/8	4	153401	1
		6	153402	
		8	153404	
	R1/4	6	153403	
		8	153405	
	R3/8		153406	
		10	153407	
		12	153408	
	R1/2		153409	
QSR – male thread with external hexagon Rotatable 360°, with ball bearing, with sealing ring				
	G1/8	4	186276	1
		6	186277	
		8	186279	
	G1/4	6	186278	
		8	186280	
	G3/8		186281	
		10	186282	
		12	186283	
	G1/2		186284	

L-shape

	D1	D2	TNR	PE
QSRL – male thread with external hexagon Rotatable 360°, with ball bearing, with sealing ring				
	M5	4	153529	1
		6	153530	

L-shape

	D1	D2	TNR	PE
QSRL – male thread with external hexagon				
Rotatable 360°, with ball bearing				
	R1/8	4	153410	1
		6	153411	
		8	153413	
	R1/4	6	153412	
		8	153414	
	R3/8		153415	
		10	153416	
		12	153417	
	R1/2		153418	
QSRL – male thread with external hexagon				
Rotatable 360°, with ball bearing, with sealing ring				
	G1/8	4	186285	1
		6	186286	
		8	186288	
	G1/4	6	186287	
		8	186289	
	G3/8		186290	
		10	186291	
		12	186292	
	G1/2		186293	

Accessories

	Size	TNR	PE
QSO – release tool Quick-out releasing tool for QS push-in fittings for tubing O.D. 4 ... 10 mm			
	10	158419	1

Configurable products



This product and all its product options can
be ordered online via the configurator:
www.festo.com/catalogue/qs



Highlights

05

Barbed fittings for I.D. tubing – Highlights



Highlights

from our range of barbed fittings for
I.D. tubing



Quick connectors

NPCK

- + Clean design
 - + High resistance to corrosion,
chemicals and temperature
- 192



Product finder for fittings:

→ www.festo.com/productfinder/fittings



Reliable and quickly installed: barbed fittings

Fast, safe and very attractively priced:

The tried and tested barbed fittings from the Festo accessories range.

Reliable for use in applications where repeated releasing of the connections is not required.

Selection aid _____ 188

Additional information:

→ www.festo.com/fitting

**Can be used with:**

I.D. tubing → 31

	Type, description
	NPCK, quick connectors, Clean Design The NPCK is ideal for use in areas subject to intensive cleaning. It fulfils all clean design requirements and is FDA-compliant. The special design of the union nut avoids edges and areas where microorganisms and other forms of contamination might accumulate. For the process automation and pharmaceutical industry, too, the fitting NPCK is interesting: made of high-grade stainless steel and able to handle a very wide range of media. It meets HACCP hygiene requirements, is resistant to corrosion, cleaning agents and high temperatures, clean design
	N/CN, barbed fittings RTU/L-PK/T-PK/FCN, barbed tubing connectors At home in tight spaces Smart connection technology makes this fitting extremely compact. Very popular in the electronics and food industries, in control cabinets or assembly frames. To connect: simply push the tubing onto the ribbed grommet, ideally using the optional connecting pliers. With sealing ring, barbed connector for Festo plastic tubing, corrosion-resistant, acid-resistant, can be aligned. For tubing O.D. 3 to 8 mm.
	C-P/N-P, barbed hose fittings for hose clip Connection G1/8, G1/4, G3/8, G1/2, G3/4, 3/4NPT, 1NPT For tubing I.D. 6 to 19 mm Threaded connection, G-thread with sealing ring, barbed hose fittings, hose clips
	CK, quick connectors Absolutely reliable and extremely economical, wherever connectors are to be installed permanently. Easy to connect: just attach the tubing and secure it with the union nut. Many variants. Versions: aluminium, polyamide, sealing ring, injection-moulded sealing edge. For tubing I.D. 9 and 13 mm, for tubing O.D. 4 to 8 mm

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Additional information:

→ www.festo.com/fitting



Barbed fittings

NPCK, quick connectors

The NPCK is ideal in areas that are subject to intensive cleaning. It fulfils all clean design requirements and is FDA-compliant. The special design of the union nut avoids edges and areas where microorganisms and other forms of contamination might accumulate. For process automation and the pharmaceutical industry, too, the NPCK is interesting: made of high grade of stainless steel and able to handle a very wide range of media.

- + Fulfils HACCP hygiene requirements
- + Resistant to corrosion, cleaning agents and high temperatures
- + Clean design

Maximum corrosion resistance CRC 4. For pneumatic applications with a temperature range up to 120 °C and a pressure range up to 1.2 MPa.

For tubing I.D. 4, 6, 8 and 10 mm with connecting thread M5 and G1/8 ... G3/8.



Straight shape

192

Accessories

192

Can be used with:

I.D. tubing → 31

Straight shape

	D1	D2	TNR	PE
NPCK – male thread with clamped connection With O-ring				
	M5	4	1857681	1
NPCK – male thread with clamped connection With sealing ring				
	G1/8	6	1366257	1
		8	1490383	
	G1/4		1691701	
		10	1489336	
	G3/8		1489614	

Accessories

	For thread	TNR	PE
NPAS – sealing ring Polyetheretherketone, for quick connector NPCK			
	G1/4	2652517	10
	G3/8	2652519	
	G1/8	2652516	

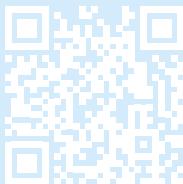
Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/npck



→ www.festo.com/support





Additional information:

→ www.festo.com/fitting



Barbed fittings/barbed hose fittings

N, CN, C-P/N-P, push-in connector

At home in tight corners

Clever connection technology makes these fittings extremely compact.

They are very popular in the electronics and food industries, in control cabinets

or in assembly frames. To connect: simply push the tubing onto the ribbed grommet, ideally using the optional connecting pliers.

- + For tubing O.D. from 3 to 8 mm
- + For tubing I.D. from 6 to 19 mm
- + Many designs and variants
- + Corrosion-resistant
- + Acid-resistant
- + Rotatable



Barbed fittings
Straight shape **196**



L-shape **197**



T-shape **197**



Barbed hose fitting **198**



Barbed tubing connectors **200**



Barbed connectors **201**

Can be used with:

I.D. tubing → 31

Straight shape

	D1	D2	TNR	PE
N – male thread and external hexagon with sealing ring, for tubing O.D.				
	M5	4	4446	10
		6	4902	
CN – male thread with external hexagon with sealing ring, for tubing O.D.				
	M3	3	15871	10
		4	15872	
	M5	3	19521	
		4	12255	
		6	12256	
	G1/8	4	11944	
		6	11945	
		8	11946	
	G1/4	6	11947	
		8	11948	
	G3/8		11949	
CRCN – stainless steel, male thread and external hexagon with sealing ring, for tubing O.D.				
	M5	3	30985	10
		4	13967	
		6	13968	
	G1/8	4	13969	
		6	13970	
		8	13971	
	G1/4	6	13972	1
		8	13973	
	G3/8		13974	
SCN – bulkhead fitting for tubing O.D.				
	3	—	19528	10
	4		11972	
	6		11973	
	8		11974	

L-shape

	D1	D2	TNR	PE
LCN – male thread rotatable 360°, with sealing ring, for tubing O.D.				
	M3	3	30491	10
		4	30982	
	M5	3	19523	
		4	12257	
		6	12258	
	G1/8	4	11955	
		6	11956	
		8	11957	
	G1/4	6	12958	
		8	12959	
	G3/8		12960	
LCNH – male thread rotatable 360°, with sealing ring, for tubing O.D.				
	M5	3	35982	10
		4	35983	
		6	35984	
	G1/8	4	35985	
		6	35986	
		8	35987	
	G1/4	6	35988	
		8	35989	
	G3/8		35990	

T-shape

	D1	D2	TNR	PE
TCN – male thread rotatable 360°, with sealing ring, for tubing O.D.				
	M3	3	30492	10
		4	30983	
	M5	3	19525	
		4	12259	
		6	12432	
	G1/8	4	11961	
		6	11962	
		8	11963	
	G1/4	6	11964	
		8	11965	
	G3/8		11966	

Barbed hose fitting

	D1	D2	TNR	PE
C-...-P Brass, for tubing O.D. Plastic tubing is plugged in and then secured with hose clip SK				
	G1/8	8	2021	10
	G1/4		2022	
	G3/8		2024	
C-...-P Brass, for tubing I.D. Plastic tubing is plugged in and then secured with hose clip SK				
	G1/4	9	2023	10
	G3/8		2025	1
	G1/2	13	2026	
N-...-P Aluminium, for tubing I.D. Plastic tubing is plugged in and then secured with hose clip SK				
	3/4 NPT	19	564848	1
	1 NPT		572243	
	R1		572260	
	G1/8	For tubing I.D. 6 mm	3605	10
	G1/4		3606	
		9	3607	
	G3/8	For tubing I.D. 6 mm	3608	
			9	
		13	36160	1
	G1/2	9	3610	10
		13	3611	1
	G3/4		3612	
		19	3613	

Barbed hose fitting

	D1	D2	TNR	PE
N-...-P-...-MS Brass, for tubing I.D. Plastic tubing is plugged in and then secured with hose clip SK				
	G1/8	For tubing I.D. 6 mm	15630	10
	G1/4		15631	
		9	15632	
	G3/8	For tubing I.D. 6 mm	15633	
		9	15634	
		13	36161	
	G1/2	9	15635	1
		13	15636	
	G3/4		15637	
		19	15638	

Straight shape

	D1	D2	TNR	PE
RTU – barbed tubing connector for tubing O.D.				
	3	–	19541	10
	4	3	19542	
		4	4805	
	6	4	4499	
		6	4806	
	8	–	7605	
		6	7604	

L-shape

	D1	TNR	PE
L-PK – barbed tubing connector for tubing O.D.			
	3	19539	10
	4	7473	
	6	9584	
	8	150012	

T-shape

	D1	TNR	PE
T-PK – barbed tubing connector for tubing O.D.			
	3	30919	10
	4	7267	
	6	9585	
	8	150015	

Y-shape

	D1	TNR	PE
Y-PK – barbed tubing connector for tubing O.D.			
	3	19540	10
	4	7269	
	6	9586	
	8	150013	

Barbed T-connector

	D1	D2	TNR	PE
FCN for tubing O.D.				
	3	–	19527	10
		4	31314	
	4	–	14768	
		6	31315	
	6	–	14769	
		8	31316	
	8	–	14770	
		–	–	



Additional information:

→ www.festo.com/fitting



Barbed fittings

CK, quick connectors

CK quick connectors:**The classic solution for stringent safety requirements**

Absolutely safe and extremely economical, wherever connectors are to be installed permanently.

Easy to connect: just attach the tubing and secure it with the union nut.

- + For tubing O.D. 4 to 8 mm
- + For tubing I.D. 9 to 13 mm
- + Many variants
- + Versions: aluminium, polyamide, sealing ring, injection-moulded sealing edge



Straight shape

204

L-shape

205

T-shape

206

Accessories

207

Can be used with:

I.D. tubing → **31**

Straight shape

	D1	D2	TNR	PE
CK – male thread				
Metal version, with sealing ring, for tubing O.D.				
	M5	4	3561	10
		6	3562	
	G1/8	4	3563	
		6	2027	
		8	2028	
	G1/4	6	2029	
		8	2030	
G3/8		2032		
CK – male thread				
Metal version, with sealing ring, for tubing I.D.				
	G1/4	9	2031	10
	G3/8		2033	
		13	4097	
	G1/2		4098	1
CK-...-KU – male thread with moulded sealing edge				
Polymer version, for tubing O.D.				
	G1/8	4	6253	10
		6	6254	
		8	6255	
	G1/4	6	6256	
		8	6257	
	G3/8		6460	
CK-...-KU – male thread with moulded sealing edge				
Polymer version, for tubing I.D.				
	G1/4	9	6258	10
	G3/8		6468	
ACK – female thread				
Aluminium version, with sealing ring, for tubing O.D.				
	G1/8	4	5664	10
		6	3714	
		8	7842	
	G1/4	6	3713	
		8	3712	
	G3/8		3711	

Straight shape

	D1	D2	TNR	PE
ACK – female thread Aluminium version, with sealing ring, for tubing I.D.				
	G3/8	9	3710	10
	G1/2	13	4099	1
QCK – bulkhead quick connector, female thread Aluminium version, with sealing ring, for barbed connector I.D., with nut				
	M5	4	9424	10
	G1/8	6	9425	
	G1/4	8	9426	
	G3/8	9	9427	1
SCK – Bulkhead quick connector Aluminium version, for barbed connector I.D., with union nut				
	4	3	9420	10
	6	4	9421	
	8	6	9422	
	9	9	9423	1
SCK-...-KU – bulkhead quick connector, with moulded sealing edge Polymer version, for barbed connector I.D., with union nut				
	4	3	9387	10
	6	4	9388	
	8	6	9389	
	9	9	9390	1

L-shape

	D1	D2	TNR	PE
GCK-...-KU – male thread Polymer version, for barbed connector I.D., with nut				
	R1/8	6	6267	10
		8	6268	
	R1/4	6	6269	
		8	6270	
	R3/8		6271	
		9	6272	

L-shape

	D1	D2	TNR	PE
LCK – rotatable, male thread Zinc die-cast metal version, with 2 sealing rings, for barbed connector I.D., with nut				
	M5	4	4468	10
		6	4562	
	G1/8	4	4136	
		6	4469	
		8	4470	
	G1/4	6	4471	
		8	4472	
		9	11452	
	G3/8	8	4473	1
		9	4474	
	G1/2	13	4100	
LCK-...-KU – rotatable, male thread Polymer version, with moulded sealing edge, for barbed connector I.D., with nut				
	G1/8	6	6259	10
		8	6260	
	G1/4	6	6261	
		8	6262	

	D1	D2	TNR	PE
TCK – rotatable, male thread Zinc die-cast metal version, with 2 sealing rings, for barbed connector I.D., with nut				
	M5	4	4484	10
		6	4563	
	G1/8	4	4137	
		6	4485	
		8	4486	
	G1/4	6	4487	
		8	4488	
	G3/8		4489	1
		9	4490	
	G1/2	13	4101	

	D1	D2	TNR	PE
TCK-...-KU – rotatable, male thread with moulded sealing edge Polymer version, for barbed connector I.D., with nut				
	G1/8	6	6263	10
		8	6264	
	G1/4	6	6265	
		8	6266	
FCK-...-KU – manifold Polymer version, for barbed connector I.D., with union nut				
	4	3	6273	10
	6	4	6274	
	8	6	6275	
	9	9	6276	

Accessories

	Size	TNR	PE
MCK – union nut Aluminium			
	M12x1	2966	1
	M10x1	2965	
	M16x1	2967	
	M22x1	206504	
	M6x0.75	205254	
	M8x1	205257	
MCK-KU – union nut Polymer			
	M10x1	211291	1
	M6x0.75	211289	
	M16x1	211293	
	M12x1	211292	

Accessories

	D1	TNR	PE
CV-PK – sealing cap Polyurethane			
	For tubing outer diameter of 4 mm, for barbed fitting I.D. 3 mm with union nut	6213	10
	For tubing outer diameter of 6 mm, for barbed fitting I.D. 4 mm with union nut	6214	
	For tubing outer diameter of 8 mm, for barbed fitting I.D. 6 mm with union nut	6215	
	For barbed fitting inside diameter of 9 mm with union nut	6216	

Accessories

	I.D.	TNR	PE
CV-PC – sealing cap Polyvinyl chloride			
	8	7637	100

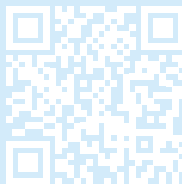
Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/ck



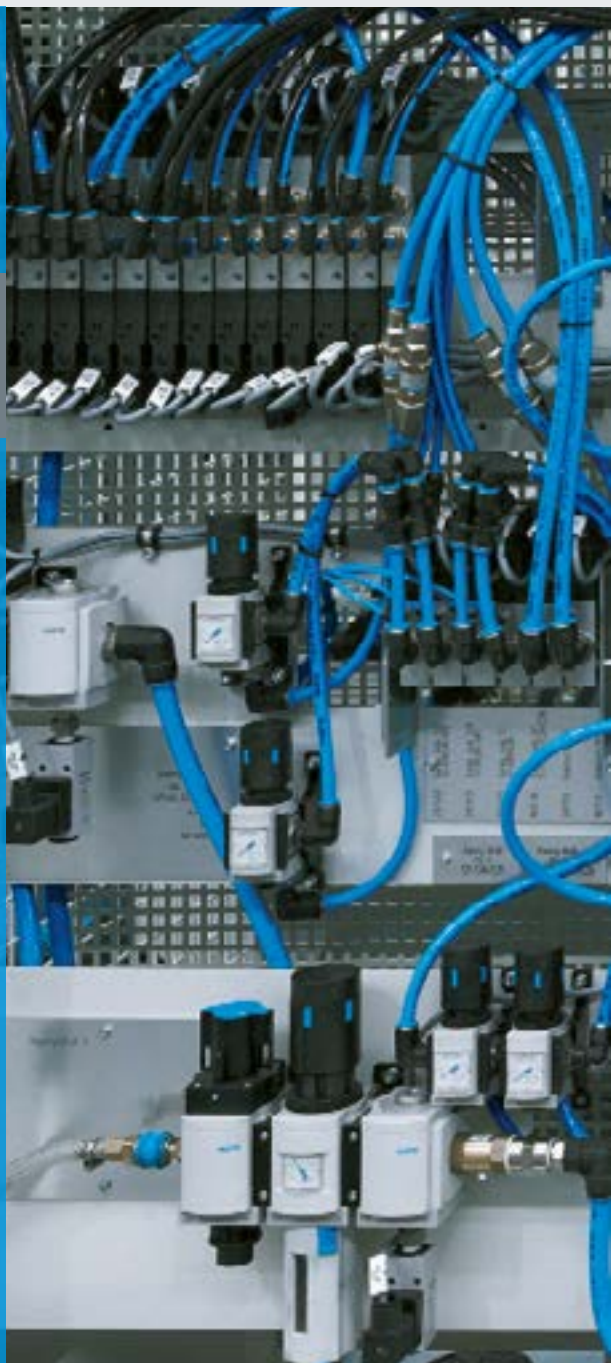
→ www.festo.com/service2see



Highlights

06

Threaded fittings – Highlights





Highlights

from our range of threaded fittings



Threaded fittings

NPFC

- + Threaded connection
 - + Metric thread with sealing ring
 - + R thread with PTFE coating
 - + G thread with sealing ring
- 220





Product finder for fittings

→ www.festo.com/productfinder/fittings



The threaded fittings

The threaded fittings are ideal for the cost-effective installation of service unit components, control cabinets and other pneumatic installations.

- + Operating temperature: $-20 \dots +150 \text{ }^{\circ}\text{C}$
- + Operating pressure at $20 \text{ }^{\circ}\text{C}$: $-0.95 \dots +5 \text{ MPa}$
- + Medium: compressed air, vacuum, others on request
- + Design: nickel-plated brass

Look for our products from the Core Range ★

Threaded fittings selection aid _____ **214**

Additional information:

→ www.festo.com/fitting



	Type, description
	B, blanking plug ★ B-F1A, blanking plug, recommended for production systems for manufacturing lithium-ion batteries Connection M3, M5, M7, G1/8, G1/4, G3/8, G1/2, G3/4, G1
	NPFC, threaded fittings Connection M5, R1/8, R1/4, R3/8, R1/2, R3/4, R1, G1/8, G1/4, G3/8, G1/2, G3/4, G1 Threaded connection: metric thread with sealing ring, R thread with PTFE coating, G thread with sealing ring.
	Reducers/pipe sockets/double nipples Connection M3, M5, M7, R1/8, R1/4, R3/8, R1/2, G1/8, G1/4, G3/8, G1/2, G3/4, G1 Threaded connection: metric thread with sealing ring, R thread with PTFE coating. G thread with sealing ring.
	Ring pieces/hollow bolts/adapters Connection M5, G1/8, G1/4, G3/8, 1/4 NPT

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Blanking plugs

B ★

With external or internal hexagon

Connecting thread M3, M5, M7, G1/8, G1/4, G3/8, G1/2, G3/4, G1

Look for our products from the Core Range ★



Additional information:

→ www.festo.com/fitting

Blanking plug

	D1	TNR	PE
B – male thread with external hexagon			
With sealing ring			
	M3	★ 30979	10
	M5	★ 3843	
		534212	100
B – male thread with internal hexagon			
With sealing ring			
	M5	★ 174308	10
	M7	★ 174309	
	G1/8	★ 3568	
		534213	100
	G1/4	★ 3569	10
		534214	50
	G3/8	★ 3570	10
		534215	20
	G1/2	★ 3571	10
		534216	20
	G3/4	★ 3572	1
	G1	★ 5763	
B-F1A – male thread with internal hexagon			
With sealing ring			
Recommended for production facilities for manufacturing lithium-ion batteries			
	M5	8142288	10
	M7	8144525	
	G1/8	8142289	
	G1/4	8142290	



Additional information:

→ www.festo.com/fitting



Threaded fittings

NPFC

Connection M5, R1/8, R1/4, R3/8, R1/2, R3/4, R1, G1/8, G1/4, G3/8, G1/2, G3/4, G1

Threaded connection: metric thread with sealing ring, R thread with PTFE coating, G thread with sealing ring.



Straight shape

→ 220



L-shape

→ 223



T-shape

→ 224



X-shape

→ 225



Y-shape

→ 225

Straight shape

	D1	D2	TNR	PE
NPFC-S – sleeve				
	M5	M5	8030290	10
	G1/8	G1/8	8030291	
	G1/4	G1/4	8030292	
	G3/8	G3/8	8030293	
	G1/2	G1/2	8030294	
	G3/4	G3/4	8030295	
NPFC-R – reducing sleeve				
	G1/8	M5	8069219	10
	G1/4	G1/8	8069220	
	G3/8		8030296	
		G1/4	8069221	
	G1/2	G1/8	8069222	
		G1/4	8069223	
		G3/8	8069224	
	G3/4	G1/2	8030297	
	G1		8069225	
		G3/4	8069226	
NPFC-E1 – Extension, short				
	M5	M5	8069218	10
	G1/8	G1/8	8030298	
	G1/4	G1/4	8030299	
	G3/8	G3/8	8030300	
	G1/2	G1/2	8030301	
NPFC-E2 – Extension, medium				
	G1/8	G1/8	8030302	10
	G1/4	G1/4	8030303	
NPFC-E3 – Extension, long				
	G1/8	G1/8	8030304	10
	G1/4	G1/4	8030305	
NPFC-E4 – Extension, extra long				
	G1/8	G1/8	8030306	10

Straight shape

	D1	D2	TNR	PE	
NPFC-D-M – double nipple					
	M3	M3	8069210	10	
	M5	M5	8030267		
	R1/8	R1/8	8030278		
	R1/4	R1/4	8030281		
	R3/8	R3/8	8030284		
	R1/2	R1/2	8030286		
	R3/4	R3/4	8030288		
	R1	R1	8030289		
	G1/8	G1/8	8030269	100	
			8069212		
	G1/4	G1/4	8030272		10
			8069213		100
	G3/8	G3/8	8030275		10
			8069214		50
	G1/2	G1/2	8030277		10
			8069215		50
G3/4	G3/4	8069217	10		
NPFC-D-M – double nipple					
Reducing					
	M5	G1/8	8069211	10	
	M7		8030268		
	R1/8	R1/4	8030279		
		R3/8	8030280		
	R1/4		8030282		
		R1/2	8030283		
	R3/8		8030285		
	R1/2	R3/4	8030287		
	G1/8	G1/4	8030270		
		G3/8	8030271		
	G1/4		8030273		
		G1/2	8030274		
	G3/8		8030276		
	G1/2	G3/4	8069216		
NPFC-D-M-F1A – double nipple					
	G1/8	G1/8	8133311	1	

Straight shape

	D1	D2	TNR	PE
NPFC-DS-M – double nipple				
With sealing ring				
	M5	M5	8142592	10
	G1/8		8142591	
		G1/8	8142583	
	G1/4		8142584	
		G1/4	8142585	
	G3/8		8142586	
		G3/8	8142588	
	G1/2	G1/4	8142587	
		G3/8	8142589	
		G1/2	8142590	
NPFC-R-FM – reducing nipple, female/male thread				
	G1/8	M5	8030314	10
	G1/4	G1/8	8030315	
	G3/8		8030316	
		G1/4	8030317	
	G1/2	G3/8	8030318	
NPFC-R-MF – reducing nipple, male/female thread				
	M5	M3	8069227	10
	M7	M5	8069228	
	G1/8		8030307	
	G1/4		8069229	
		G1/8	8030308	100
			8069230	
	G3/8		8030309	10
		G1/4	8030310	
			8069231	50
	G1/2		8030311	10
			8069232	50
		G3/8	8030312	10
			8069233	50
	G3/4	G1/4	8069234	10
		G3/8	8069235	
		G1/2	8030313	
			8069236	50
	G1		8069237	10
		G3/4	8069238	

Straight shape

	D1	D2	TNR	PE
NPFC-RS-MF – reducing nipple				
	G1/8	M5	8142593	10
	G1/4	G1/8	8142594	
	G3/8		8142595	
		G1/4	8142596	
	G1/2		8142597	
		G3/8	8142598	
	G3/4		8142600	
		G1/2	8142599	
	G1		8142601	
		G3/4	8142602	
NPFC-H – bulkhead fitting				
	M5	M5	8069239	10
	G1/8	G1/8	8069240	
	G1/4	G1/4	8069241	
	G3/8	G3/8	8069242	
	G1/2	G1/2	8069243	

L-shape

	D1	D2	TNR	PE
NPFC-L-F – Elbow fitting, female thread				
	M5	M5	8030208	10
	G1/8	G1/8	8030209	
	G1/4	G1/4	8030210	
	G3/8	G3/8	8030211	
	G1/2	G1/2	8030212	
	G3/4	G3/4	8030213	
	G1	G1	8030214	
NPFC-L-MF – Elbow fitting, male thread/female thread				
	M5	M5	8030215	10
	R1/8	G1/8	8030216	
	R1/4	G1/4	8030217	
	R3/8	G3/8	8030218	
	R1/2	G1/2	8030219	
	R3/4	G3/4	8030220	
	R1	G1	8030221	

L-shape

	D1	D2	TNR	PE
NPFC-L-M – Elbow fitting, male thread				
	M5	M5	8030222	10
	R1/8	R1/8	8030223	
	R1/4	R1/4	8030224	
	R3/8	R3/8	8030225	
	R1/2	R1/2	8030226	
	R3/4	R3/4	8030227	

T-shape

	D1	D2	TNR	PE
NPFC-T-F – T-fitting, female thread				
	G1/8	G1/8	8030235	10
	G1/4	G1/4	8030236	
	G3/8	G3/8	8030237	
	G1/2	G1/2	8030238	
	G3/4	G3/4	8030239	
	G1	G1	8030240	
NPFC-T-FMF – T-fitting, female thread/male thread/female thread				
	M5	M5	8030245	10
	G1/8	R1/8	8030246	
	G1/4	R1/4	8030247	
	G3/8	R3/8	8030248	
	G1/2	R1/2	8030249	
	G3/4	R3/4	8030250	
	G1	R1	8030251	
NPFC-T-FMM – T-fitting, female thread/male thread/male thread				
	G1/8	R1/8	8030255	10
	G1/4	R1/4	8030256	
	G3/8	R3/8	8030257	
	G1/2	R1/2	8030258	
NPFC-T-M – T-fitting, male thread				
	R1/4	R1/4	8030252	10
	R3/8	R3/8	8030253	
	R1/2	R1/2	8030254	

T-shape

	D1	D2	TNR	PE
NPFC-T-MMF – T-fitting, male thread/male thread/female thread				
	R1/8	G1/8	8030259	10
	R1/4	G1/4	8030260	
	R1/2	G1/2	8030261	
NPFC-T-MFF – T-fitting, male thread/female thread/female thread				
	M5	M5	8069244	10
	R1/8	G1/8	8030241	
	R1/4	G1/4	8030242	
	R3/8	G3/8	8030243	
	R1/2	G1/2	8030244	

Y-shape

	D1	D2	TNR	PE
NPFC-Y-F – Y-fitting, female thread				
	G1/4	G1/4	8030228	10
	G3/8	G3/8	8030229	
	G1/2	G1/2	8030230	
NPFC-Y-MFF – Y-fitting, male thread/female thread/female thread				
	R1/8	G1/8	8030231	10
	R1/4	G1/4	8030232	
	R3/8	G3/8	8030233	
	R1/2	G1/2	8030234	

X-shape

	D1	D2	TNR	PE
NPFC-X-F – X-fitting, female thread				
	G1/4	G1/4	8030262	10
	G3/8	G3/8	8030263	
	G1/2	G1/2	8030264	

X-shape

	D1	D2	TNR	PE
NPFC-X-MFFF – X-fitting, male thread/female thread/female thread/female thread				
	R1/4	G1/4	8030265	10
	R1/2	G1/2	8030266	

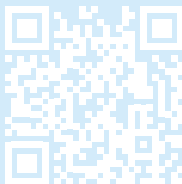
Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/npfc



→ www.festo.com/support





Additional information:

→ www.festo.com/fitting



Reducers/pipe sockets/double nipples

D, ESK, QM, LJK, TJK, FR

Connection M3, M5, M7, R1/8, R1/4, R3/8, R1/2, G1/8, G1/4, G3/8, G1/2, G3/4, G1

Threaded connection: metric thread with sealing ring, R thread with PTFE coating, G thread with sealing ring.



Straight shape **230**



L-shape **230**



T-shape **231**

Straight shape

	D1	D2	TNR	PE
D – reducing nipple, internal hexagon				
With sealing ring				
	M5	M7	161359	10
ESK – double nipple				
For angle compensation				
	R1/8	R1/8	151520	1
	R1/4	R1/4	151521	
	R3/8	R3/8	151522	
	R1/2	R1/2	151523	
ESK – double nipple				
Reducing, for angle compensation				
	R1/8	R1/4	534151	1
		R3/8	534155	
	R1/4		534152	
		R1/2	534153	
	R3/8		534154	
QM – sleeve				
	M5	M5	3560	10
	G1/8	G1/8	2254	
	G1/4	G1/4	2255	
	G3/8	G3/8	2256	
	G1/2	G1/2	2257	
	G3/4	G3/4	4226	
	G1	G1	9968	1

L-shape

	D1	TNR	PE
LJK – Elbow fitting			
With sealing ring			
	G1/8	4945	1
	G1/4	4946	
	G3/8	4947	
	G1/2	4948	

L-shape

	D1	TNR	PE
G – Elbow With sealing ring			
	M5	3558	10
	G1/8	3614	
	G1/4	3615	
	G3/8	3616	1

T-shape

	D1	TNR	PE
TJK – T-fitting With sealing ring			
	M3	15874	10
	G1/8	4949	1
	G1/4	4950	
	G3/8	4951	
	G1/2	4952	
FR – distributor T-distributor, with sealing ring			
	M5	3559	10
	G1/8	3583	
	G1/4	3586	
	G3/8	3587	1



Additional information:

→ www.festo.com/fitting



Ring pieces/hollow bolts/adapters

LK, TK, VT, NPFV

Connection M5, G1/8, G1/4, G3/8, 1/4 NPT



Ring pieces **234**



Hollow bolts **235**



Adapters **236**

Multiple distributor

	D1	D2	TNR	PE
LK – ring piece, L-shape Die-cast zinc version				
	M5	3	4475	10
			4597	
		4	4476	
		6	4477	
	G1/4	4	4478	
		6	4479	
G3/8		4480	1	
LK – ring piece, T-shape Female thread, with 2 sealing rings				
	G1/8	G1/8	9181	1
	G1/4	G1/4	9173	
	G3/8	G3/8	9175	
LK-KU – ring piece, L-shape Polymer version, for tubing I.D.				
	G1/8	4	6280	10
		6	6281	
	G1/4	4	6282	
		6	6283	
TK-KU – ring piece, T-shape Polymer version, for tubing I.D.				
	G1/8	4	6284	1
		6	6285	
	G1/4	4	6286	
		6	6287	
TK– ring piece Female thread, with 2 sealing rings				
	G1/8	G1/8	9182	1
	G1/4	G1/4	9174	
	G3/8	G3/8	9176	

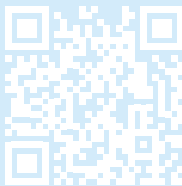
Multiple distributor

	D1	D2	TNR	PE
VT-...-2 – hollow bolt with sealing ring				
Die-cast zinc version, for 2 ring pieces with D2				
	G3/8	G3/8	9179	1
	G1/4	G1/4	9177	
	M5	3	206145	
	G1/8	–	4593	100
		G1/8	206146	
	G1/4	4	206147	1
G3/8	6	206148		
VT-...-3 – hollow bolt with sealing ring				
Die-cast zinc version, for 3 ring pieces with D2				
	G1/8	–	4596	1
	G1/4		2335	
	G3/8		2336	

Adapter with filter

	D1	D2	TNR	PE
NPFV – adapter High-alloy steel				
	G1/4	G1/4	563398	1
		1/4 NPT	563397	
	1/4 NPT		4727333	

→ www.festo.com/support



Highlights

07

Click fittings for standard O.D. tubing – Highlights





Click fittings

NPKA

- + Low leakage, no scratching of the tubing by retaining claws
- + Easy to clean, sealed shape when tubing is fitted
- + Also suitable for pipes with appropriate slot

→ 242



Product finder for fittings

→ www.festo.com/productfinder/fittings



NPKA makes changing tubing extremely easy

With the unique click mechanism, you can change a pipe or tube with one hand.

The audible click indicates that the connection is firm, secure and leak-proof, even if you connect and disconnect often. The light, corrosion-free polymer has lots of advantages: it is free of non-ferrous metals, fluoride, silicone and grease, FDA-conform, and it is suitable for cleanrooms.

Ideal for the electronics and semiconductor industries, assembly of small parts and battery cells, and for food and beverage production.

- + Very easy to operate with one hand
- + Many possible uses – solely made of polymer
- + Clean look without corners or edges for easy cleaning

Selection aid

Straight shape	242
L-shape	242
T-shape	242

Additional information:

→ www.festo.com/fittings

**Can be used for:**

O.D. tubing → 26

Straight shape

	D1	D2	TNR	PE
NPKA – Click fitting, male thread with hex socket				
	G1/8	6	1243489	10

L-shape

	D1	D2	TNR	PE
NPKA-L – Elbow click fitting, male thread with external hex rotatable				
	G1/8	6	1655429	10

T-shape

	D1	D2	TNR	PE
NPKA-T – Click T-connector				
	6	6	1590710	10

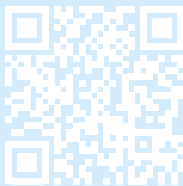
Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/nпка



→ www.festo.com/service2see





Highlights

from our range of push-in fittings for pipes



Push-in fittings

CQ

+ Connection G3/8, G1/2, G3/4, G1

+ Diameter 12, 15, 18, 22 and 28 mm.

→ **248**



Product finder for fittings

→ www.festo.com/productfinder/fittings



A comprehensive range of nominal widths

Reliable design for practical use: the CQ system holds the pipes on the outside so the reduction in nominal width is negligible.

Extremely easy and fast to install; just push it in – you don't even need any tools.

Suitable for polyamide and aluminium pipes.

Outside diameter: 12, 15, 18, 22 and 28 mm

- + Suitable for plastic tubing PAN-R with O.D. 22 and 28 mm
- + For compressed air, vacuum and liquids
- + Can be re-used multiple times
- + Plug connector materials FDA-approved

Selection aid

Straight shape	248 , 250
Distributors	248
L-shape	250
T-shape	251
Fluid separators	251
Accessories	249, 251

Additional information:

→ www.festo.com/fitting



Can be used with:

Pipes → 70

Straight shape

	D1	D2	TNR	PE
CQ – Push-in fitting With sealing ring				
	G3/8	12	177682	1
	G1/2		177683	
		15	177684	
		18	177685	
	G3/4	22	177686	
CQ-...H – Push-in fitting, with push-in sleeve With sealing ring				
	G3/8	12	177705	1
		15	177707	
	G1/2	12	177706	
		15	177708	
		18	177709	
		22	177710	
	G3/4		177711	
	G1	28	194589	

Distributors

	D1	D2	TNR	PE
CQD With 3 blanking plugs				
	G1/2	G1/2	177717	1

Accessories

	D1	TNR	PE
CQO – Releasing tool			
	15	175725	1
	22	175726	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/cq



Straight shape

	D1	D2	TNR	PE
CQ – Push-in connector				
	12	12	177695	1
	15	15	177696	
	18	18	177697	
	22	22	177698	
	28	28	194586	
CQ-...H – Push-in connector with push-in sleeve				
Reducing				
	15	12	177701	1
	18	15	177702	
	22		177703	
		18	177704	
	28	22	196231	
CQH – Push-in sleeve				
Connects CQ with QS fittings				
	15	12	177721	1
	18	16	177722	
	22		177723	
CQC – blanking plug				
	12	12	177712	1
	15	15	177713	
	18	18	177714	
	22	22	177715	
	28	28	194590	

L-shape

	D1	D2	TNR	PE
CQL – Push-in L-connector				
	12	12	177691	1
	15	15	177692	
	18	18	177693	
	22	22	177694	
	28	28	194587	

T-shape

	D1	D2	TNR	PE
CQT – Push-in T-connector				
	12	12	177687	1
	15	15	177688	
	18	18	177689	
	22	22	177690	
	28	28	194588	
CQT – Push-in T-connector Reducing				
	18	15	177699	1
	22		177700	

Fluid separator

	D1	D2	TNR	PE
CQA Polymer version				
	22	22	177716	1
CQA Brass				
Creates a water separator with push-in connector CQT				
	28	28	196984	1

Accessories

	D1	TNR	PE
CQO – Releasing tool			
	15	175725	1
	22	175726	



Highlights

from our range of couplings

Coupling socket and plug

NPHS ★

- + Connection for male thread G1/8, G1/4, G3/8, G1/2
- + Connection for female thread G1/4, G3/8, G1/2
- + Connection for barbed connector N9
- + Shut off at one side

→ 260





A comprehensive range of nominal widths

The Festo range of couplings is suitable for all industries and applications.

Whenever and wherever they're needed. Particularly if you are looking for a quick, easy and, if need be, completely safe way of connecting and disconnecting components.

- + Easy and safe to use
- + Quick couplings
- + Safety couplings
- + Wide range of connections: male and female thread, barbed fittings, fittings with union nut, bulkhead fittings

Look for our products from the Core Range ★

Selection aid _____ 256

Additional information:

→ www.festo.com/couplings



	Type, description
	NPHS, safety coupling ★ Size 6 Connection for male thread G1/8, G1/4, G3/8, G1/2 Connection for female thread G1/4, G3/8, G1/2 Connection for barbed connector N-9 Shut off on one side Safety exhaust couplings with coupling sockets NPHS-D6 with metal unlocking sleeve fulfil the requirements for pneumatic systems to EN ISO 4414.
	KD, coupling sockets ★ Sizes 1, 2, 3, 4 Connection M3, M5, G1/8, G1/4, G3/8, G1/2, quick connector CK-3, CK-4, CK-6, CK-9, N-9 Diameter 2, 3, 4, 6, 9, 13 mm Threaded connection, metric thread with sealing ring, G thread with sealing ring, shut off one side, shut off on both sides
	KS, quick coupling plugs Sizes 1, 2, 3, 4 Connection M5, G1/8, G1/4, G3/8, G1/2, G3/4, G1, quick connector CK-3, CK-4, CK-6, CK-9, barbed fitting CN-2, N-9 Threaded connection, metric thread with sealing ring, G thread with sealing ring
	KSV, KDVF, multiple connectors Multi-plugs KSV and suitable barbed connectors Multi-sockets KDVF and suitable terminal sockets For up to 32 cables
	KM, multi-tube connectors For up to 22 cables

	Page
<u>Coupling sockets</u>	→ 260
<u>Quick coupling plugs</u>	→ 260
<u>Coupling sockets</u>	→ 264
<u>Quick coupling plugs</u>	→ 264
<u>Multiple connectors</u>	→ 272
<u>Multi-tube connectors</u>	→ 273



Additional information:

→ www.festo.com/couplings



Coupling sockets and quick coupling plugs

NPHS ★

Connection for male thread G1/8, G1/4, G3/8, G1/2

Connection for female thread G1/4, G3/8, G1/2

Connection for barbed connector N9

Look for our products from the Core Range ★



Coupling sockets **260**



Quick coupling plugs **260**

Size 6, shut-off at one end

	D1	TNR	PE
NPHS-D6 – Coupling socket Safety coupling, male thread Polymer releasing sleeve			
	G1/8	8059266	1
	G1/4	8059267	
	G3/8	8059268	
	G1/2	8059269	
NPHS-D6 – Coupling socket Safety coupling, male thread Metal releasing sleeve			
	G1/4	8059275	1
	G3/8	8059276	
	G1/2	8059277	
NPHS-D6 – Coupling socket Safety coupling, female thread Polymer releasing sleeve			
	G1/4	8059271	1
	G3/8	8059272	
	G1/2	8059273	
NPHS-D6 – Coupling socket Safety coupling, for plug-in nipple Polymer releasing sleeve			
	Barbed hose fitting 9 mm	8059274	1
NPHS-S6 – Quick coupling plug Safety coupling, male thread			
	G1/8	8059257	10
	G1/4	8059258	
	G3/8	8059259	
	G1/2	8059260	
NPHS-S6 – Quick coupling plug Safety coupling, female thread			
	G1/4	8059262	10
	G3/8	8059263	
	G1/2	8059264	

Size 6, shut-off at one end

	D1	TNR	PE
NPHS-S6 – Quick coupling plug Safety coupling, for plug-in nipple			
	9	8059265	10

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/nphs





Additional information:

→ www.festo.com/couplings



Coupling sockets and quick coupling plugs
KD/KS ★

Sizes 1, 2, 3, 4
Connection M3, M5, G1/8, G1/4, G3/8, G1/2,
Quick connector CK-3, CK-4, CK-6, CK-9,
Barbed fitting CN-2, N-6, N-9
Diameter 2, 3, 4, 6, 9, 13 mm
Look for our products from the Core Range ★



Coupling socket	
Size 1	264
Size 2	264
Size 3	265
Size 4	267



Quick coupling plugs	
Size 1	264
Size 2	265
Size 3	266
Size 4	268

Size 1, shut-off at one end

	D1	TNR	PE
KD1 – Coupling socket Plug-in coupling, male thread			
	M3	151995	1
KS1 – Quick coupling plug Plug-in coupling, barbed fitting			
	Barbed hose fitting 2 mm	151996	1

Size 2, shut-off at one end

	D1	TNR	PE
KD2 – Coupling socket Plug-in coupling, male thread			
	M5	4087	1
KD2 – Coupling socket Plug-in coupling, female thread			
	M5	531620	1
KD2 – Coupling socket Plug-in coupling, quick connector with union nut			
	4	531621	1
	CK-4	531622	

Size 2, shut-off at one end

	D1	TNR	PE
KS2 – Quick coupling plug Plug-in coupling, male thread			
	M5	531658	1
KS2 – Quick coupling plug Plug-in coupling, female thread			
	M5	531660	1
KS2 – Quick coupling plug Plug-in coupling, quick connector with union nut			
	4	4091	1
	6	4090	

Size 3, shut-off at one end

	D1	TNR	PE
KD3 – Coupling socket Plug-in coupling, male thread			
	G1/8	2142	1
	G1/4	531626	
KD3 – Coupling socket Plug-in coupling, female thread			
	G1/8	531627	1
	G1/4	531628	

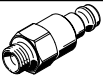
Size 3, shut-off at one end

	D1	TNR	PE
KD3 – Coupling socket Plug-in coupling, quick connector with union nut			
	6	531629	1
	8	531630	
KS3 – Quick coupling plug Plug-in coupling, male thread			
	G1/8	3492	1
	G1/4	531666	
KS3 – Quick coupling plug Plug-in coupling, female thread			
	G1/8	531668	1
	G1/4	531669	
KS3 – Quick coupling plug Plug-in coupling, quick connector with union nut			
	8	3478	1
	CK-4	3326	

Size 3, shut-off at both ends

	D1	TNR	PE
KD3-R – Coupling socket Plug-in coupling, male thread			
	G1/8	531659	1

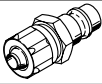
Size 3, shut-off at both ends

	D1	TNR	PE
KS3-R – Quick coupling plug Plug-in coupling, male thread			
	G1/8	531667	1

Size 4, shut-off at one end

	D1	TNR	PE
KD4 – Coupling socket Plug-in coupling, male thread			
	G1/4	2143	1
	G3/8	2144	
	G1/2	2145	
KD4 – Coupling socket Plug-in coupling, female thread			
	G1/4	531636	1
	G3/8	531637	
	G1/2	531638	
KD4 – Coupling socket Plug-in coupling, quick connector with union nut			
	8	531639	1
	9	531640	
KD4 – Coupling socket Plug-in coupling, barbed fitting			
	Barbed hose fitting 9 mm	531641	1

Size 4, shut-off at one end

	D1	TNR	PE
KS4 – Quick coupling plug Plug-in coupling, male thread			
	G1/4	2154	1
	G3/8	2155	
	G1/2	531676	
KS4 – Quick coupling plug Plug-in coupling, female thread			
	G1/4	531678	1
	G3/8	531679	
	G1/2	531680	
KS4 – Quick coupling plug Plug-in coupling, quick connector with union nut			
	6	2150	1
	8	2151	
	9	531683	
KS4 – Quick coupling plug Plug-in coupling, barbed fitting			
	Barbed hose fitting 6 mm	2152	1
	Barbed hose fitting 9 mm	2153	

Size 4, shut-off at both ends

	D1	TNR	PE
KD4-R – Coupling socket Plug-in coupling, male thread			
	G1/4	531694	1

Size 4, shut-off at both ends

	D1	TNR	PE
KS4-R – Quick coupling plug Plug-in coupling, male thread			
	G1/4	531677	1

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/ku



Accessories

	Size	TNR	PE
MCK – Union nut Wrought aluminium alloy			
	M6x0.75	533672	1
	M10x1	533673	
	M12x1	533674	
	M16x1	533675	



Additional information:

→ www.festo.com/couplings



Multiple connectors

KSV/KDVF

Multi-plugs KSV and suitable barbed connectors
Multi-sockets KDVF and suitable terminal sockets

Multi-tube connector

KM

Coupling KM and suitable terminal sockets



Multi-plugs KSV 272



Multi-sockets KDVF 272



Accessories 272



Coupling 273



Accessories 273

Multi-plug

	Max. number of con- nections	D1	TNR	PE
KSV – Male thread				
	5	PK-2	7557	1
	7	PK-6	152506	
	8	PK-2	7558	
	12	PK-6	152507	
	16	PK-2	7559	
	22	PK-6	152508	
	32	PK-2	7560	

Multi-sockets

	Max. number of con- nections	D1	TNR	PE
KDVF – Male thread				
	5	PK-2	7562	1
	7	PK-6	152509	
	8	PK-2	7563	
	12	PK-6	152510	
	16	PK-2	7564	
	22	PK-6	152511	
	32	PK-2	7565	

Accessories

	D1	TNR	PE
KSV – Barbed fitting			
	For tubing O.D. 3 mm	33384	10
	For tubing O.D. 4 mm	7215	
	For tubing O.D. 6 mm	7216	
	For tubing O.D. 8 mm	117945	
KDV – Terminal socket			
	For tubing O.D. 3 mm	244937	10
	For tubing O.D. 4 mm	208378	
	For tubing O.D. 6 mm	208380	
	For tubing O.D. 8 mm	337348	

Coupling

	Max. number of con- nections	D1	TNR	PE
KM – Multi-tube connector Barbed connector connections for plastic tubing				
	22	3	13694	1

Accessories

	D1	TNR	PE
KDV – Terminal socket For multi-tube connector KM			
	For tubing O.D. 3 mm	244937	10
	For tubing O.D. 4 mm	208378	
	For tubing O.D. 6 mm	208380	



Highlights

from our range of distributors



Distributor blocks

FR

- + Supply line female thread G1/8, G1/4, G3/8, G1/2
- + Outlet female thread M3, M5, G1/8, G1/4, G3/8, G1/2

→ 278



Rotary distributors

GF

- + Radial and axial outlets with multiple rotary distributors
- + Sturdy design with double bearings to protect against mechanical loads

→ 279



Multiple distributors

QSLV...

- + Simple connection and release
- + Up to 6 outlets
- + Rotatable 360°

→ 280



Completely flexible media supply and return

Whether it's compressed air, vacuum, liquids or gases, the distributor blocks FR, rotary distributors GF and multiple distributors of the QS series from Festo guarantee the reliable transfer of media from stationary sources to fixed or rotating machine parts.

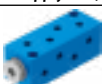
- + Distributor blocks FR
 - 1 or 2 supply lines, 3 to 12 outlets _____ **278**
- + Rotary distributor GF with 1 or 2 supply lines, radial and axial outlets, sturdy design with double ball bearings for protection against mechanical loads
 - Single _____ **279**
 - Double _____ **279**
- + Multiple distributors of the series QS in many variants with up to 6 outlets
 - Straight shape QSQ, 4 outlets _____ **280**
 - L-shape QSLV, 2 ... 6 outlets _____ **280**
 - L-shape QST3, 4 outlets _____ **282**
 - L-shape QSYTF, 3 outlets _____ **283**

Additional information:

→ www.festo.com/pneumatic-distributors



Distributor blocks

	D1	D2	TNR	PE
FR-4 1 supply line, 3 outlets				
	G1/8	G1/8	6701	1
	G1/4	G1/4	7849	
			2960	
	G3/8	G3/8	6703	
	G1/2	G1/2	6704	
FR-8 1 supply line, 8 outlets				
	G3/8	G1/8	2077	1
	G1/2	G1/4	2078	
	G3/4	G1/2	6411	
FR-9 1 supply line, 9 outlets				
	G1/8	M3	30981	1
FR-12 1 supply line, 12 outlets				
	G1/8	M5	4525	1

Rotary distributor

	D1	D2	TNR	PE
GF 4 rotating connections, 1 fixed connection				
	G1/4	G1/4	2094	1
	G3/8	G3/8	2095	

Rotary distributor, single

	D1	D2	TNR	PE
GF 1 axial input, 4 radial outputs				
	G1/8	M5	539290	1
	G1/4	G1/8	539291	
	G1/2	G1/4	539292	

Rotary distributor, dual

	D1	D2	TNR	PE
GF 2 separate inputs and outputs Inputs: axial and radial, outputs: radial				
	G1/8	G1/8	539287	1
	G1/4	G1/4	539288	
	G1/2	G1/2	539289	

Multiple distributors

	D1	D2	TNR	PE
QSQ – Straight shape				
4 outlets				
	R1/8	4	153206	1
		6	153208	
	R1/4	4	153207	
		6	153288	
QSQ – Straight shape				
4 outlets, with sealing ring				
	G1/8	4	186220	1
		6	186222	
	G1/4	4	186221	
		6	186263	
QSQ – Straight shape				
4 outlets, reducing				
	6	4	153209	1
	8	6	153210	
QSLV2 – L-shape				
2 outlets				
	R1/8	4	153211	1
		6	153212	
		8	153214	
	R1/4	6	153213	
		8	153215	
		10	153217	
	R3/8	8	153216	
		10	153218	
		12	153219	
	R1/2		153220	
QSLV2 – L-shape				
2 outlets, with sealing ring				
	G1/8	4	186223	1
		6	186224	
		8	186226	
	G1/4	6	186225	
		8	186227	
		10	186229	
	G3/8	8	186228	
		10	186230	
		12	186231	
	G1/2		186232	

Multiple distributors

	D1	D2	TNR	PE	
QSLV3 – L-shape					
3 outlets					
	R1/8	4	153221	1	
		6	153222		
		8	153224		
	R1/4	6	153223		
		8	153225		
		10	153227		
	R3/8	8	153226		
		10	153228		
		12	153229		
	R1/2		153230		
QSLV3 – L-shape					
3 outlets, with sealing ring					
	G1/8	4	186233	1	
		6	186234		
		8	186236		
	G1/4	6	186235		
		8	186237		
		10	186239		
	G3/8	8	186238		
		10	186240		
		12	186241		
	G1/2		186242		
QSLV4 – L-shape					
4 outlets					
	R1/8	4	153231	1	
		6	153232		
		8	153234		
	R1/4	6	153233		
		8	153235		
		10	153237		
	R3/8	8	153236		
		10	153238		
		12	153239		
	R1/2		153240		

Multiple distributors

	D1	D2	TNR	PE	
QSLV4 – L-shape					
4 outlets, with sealing ring					
	G1/8	4	186243	1	
		6	186244		
		8	186246		
	G1/4	6	186245		
		8	186247		
		10	186249		
	G3/8	8	186248		
		10	186250		
		12	186251		
	G1/2		186252		
QSLV6 – L-shape					
6 outlets					
	R1/8	4	153241	1	
		6	153242		
		8	153244		
	R1/4	6	153243		
		8	153245		
		10	153247		
	R3/8	8	153246		
		10	153248		
		12	153249		
	R1/2		153250		
QSLV6 – L-shape					
6 outlets, with sealing ring					
	G1/8	4	186253	1	
		6	186254		
		8	186256		
	G1/4	6	186255		
		8	186257		
		10	186259		
	G3/8	8	186258		
		10	186260		
		12	186261		
	G1/2		186262		
QST3 – L-shape					
4 outlets					
	R1/8	4	153200	1	
	R1/4	6	153201		
	R3/8	8	153202		

Multiple distributors

	D1	D2	TNR	PE
QST3 – L-shape 4 outlets, with sealing ring				
	G1/8	4	186217	1
	G1/4	6	186218	
	G3/8	8	186219	
QST3 – L-shape 4 outlets, reducing				
	6	4	153203	1
	8	6	153204	
	10	8	153205	
QSYTF – L-shape 3 outlets				
	R1/8	G1/8	153196	1
	R1/4	G1/4	153197	
	R3/8	G3/8	153198	
	R1/2	G1/2	153199	
QSYTF – L-shape 3 outlets, with sealing ring				
	G1/8	G1/8	186213	1
	G1/4	G1/4	186214	
	G3/8	G3/8	186215	
	G1/2	G1/2	186216	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/qs





Highlights

from our range of protective conduit systems



Protective conduits

MK

- + For protecting pneumatic tubing and electrical cables
 - + Galvanised steel, PA, PP, PVC, spring steel
 - + High alternating bending strength
- 290



Fittings for protective conduits

HMZ, MK

- + For optimum use of the protective conduits
- 291



Protective conduits

Our protective conduit systems for pneumatic tubing consist of protective conduits and tube fittings. Protective conduits are flexible tubes made of metal or plastic used to protect pneumatic tubing and electrical cables on machines and installations. It is recommended that suitable fittings be used to ensure optimum use of the protective conduits.

Selection aid _____ 288

Additional information:

→ www.festo.com/fitting

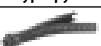


Threaded connection	Protective conduit					Junction box HMZV	→ Page
	MKV Pg 13.5	Pg 21	Pg 29	Pg 36	Pg 48	Pg 29	
Protective conduit fitting MKVV							
Pg 13.5	■	—	—	—	—	—	291
Pg 21	—	■	—	—	—	—	
Pg 29	—	—	■	—	—	■	
Pg 36	—	—	—	■	—	—	
Pg 48	—	—	—	—	■	—	
Lock nut MKVM							
Pg 13.5	■	—	—	—	—	—	291
Pg 21	—	■	—	—	—	—	
Pg 29	—	—	■	—	—	■	
Pg 36	—	—	—	■	—	—	
Pg 48	—	—	—	—	■	—	
→ Page	290					291	

	Protective conduit					Junction box HMZV	→ Page	
Threaded connection	MKR					MKG, separable		Pg 29
	Pg 9	Pg 11	Pg 16	Pg 21	Pg 29			
Protective conduit fitting MKRV								
Pg 9	■	—	—	—	—	—	291	
Pg 11	—	■	—	—	—	—		
Pg 16	—	—	■	—	—	—		
Pg 21	—	—	—	■	—	—		
Pg 29	—	—	—	—	■	■		
Elbow fitting for protective conduit MKRL								
Pg 9	■	—	—	—	—	—	292	
Pg 11	—	■	—	—	—	—		
Pg 16	—	—	■	—	—	—		
Pg 21	—	—	—	■	—	—		
Pg 29	—	—	—	—	■	■		
Y distributor MKY								
Pg 21	—	—	—	■	—	—	293	
Pg 29	—	—	—	—	■	—		
→ Page	290					290	291	

Threaded connection	Protective conduit					MKG, separable	Junction box HMZV	→ Page
	MKR							
	Pg 9	Pg 11	Pg 16	Pg 21	Pg 29			
Protective conduit connector MKRT								
Pg 16	–	–	■	■	–	–	–	292
Pg 21	–	–	■	■	–	–	–	
Protective conduit fitting MKGV, separable								
M32, M40	–	–	–	–	–	■	–	292
Reducing connector MKA (M-/Pg thread)								
M32, M40/ Pg 29	–	–	–	–	–	■	■	292
Reducing connector MKA								
Pg 29	–	–	–	–	–	–	■	292
Lock nut MKM								
Pg 9	■	–	–	–	–	–	–	292
Pg 11	–	■	–	–	–	–	–	
Pg 16	–	–	■	–	–	–	–	
Pg 21	–	–	–	■	–	–	–	
Pg 29	–	–	–	–	■	■	–	
Retaining clip MKRS								
Pg 9	■	–	–	–	–	–	–	293
Pg 11	–	■	–	–	–	–	–	
Pg 16	–	–	■	–	–	–	–	
Pg 21	–	–	–	■	–	–	–	
Pg 29	–	–	–	–	■	■	–	
Installation kit HMZAS								
Pg 21	–	–	–	■	–	–	–	291
Pg 29	–	–	–	–	■	■	■	
→ Page	290					290	291	

Protective conduits

	For threaded connection		TNR	PE
MKV Flexible, stretchable, compressible, waterproof and largely resistant to oil and acid Suitable for protective conduit fitting MKVV Polyvinyl chloride, spring steel				
	Pg 13.5	15x19	7404	50
	Pg 21	21x27	7549	
	Pg 29	29x36	7550	25
	Pg 36	38x45	7147	
	Pg 48	48x56	7148	
MKR Flexible For protecting electrical cables and pneumatic tubing Suitable for protective conduit fitting MKRV/MKRL Polyamide				
	Pg 9	10x13	177564	50
	Pg 11	12x15.8	177565	
	Pg 16	16.5x21.5	177566	
	Pg 21	23x28.5	177567	
	Pg 29	29x34.5	177568	25
MKG – separable Inner and outer tubing can be separated from each other Polypropylene				
	Pg 29	22.1x28.4	3156318	50
	Pg 29	31.8x42.4	3156319	30
MK - Flexible metal conduit, spiral-wound Very flexible, tensile strength, can withstand transverse pressure, up to 220 °C Galvanised steel				
	–	7.5x10	2203	50
	–	10x12.7	2204	

Fittings for protective conduits

	Threaded connection	TNR	PE
HMZV – junction boxes For protecting electrical cables and pneumatic tubing, especially with multi-axis setups, 5 connection options Polyamide			
	Pg 29	175126	1
HMZAS – installation kits Mounting bracket for a protective conduit Sheet steel, powder-coated			
	Pg 21	193124	1
	Pg 29	177603	
MKVV – protective conduit fittings Suitable for protective conduit MKV Polypropylene			
	Pg 13.5	19113	1
	Pg 21	19114	25
	Pg 29	19115	1
	Pg 36	19116	
	Pg 48	19117	
MKVM – lock nuts Suitable for protective conduit fitting MKVV Plastic			
	Pg 13.5	7411	1
	Pg 21	9691	
	Pg 29	9692	
	Pg 36	7413	
	Pg 48	7414	
MKRV – protective conduit fittings Suitable for protective conduit MKR Polyamide			
	Pg 9	177569	1
	Pg 11	177570	
	Pg 16	177571	
	Pg 21	177572	25
	Pg 29	177573	

Fittings for protective conduits

	Threaded connection	TNR	PE
MKRL – elbow fittings for protective conduits L-shape Suitable for protective conduit MKR Polyamide			
	Pg 9	177574	1
	Pg 11	177575	
	Pg 16	177576	
	Pg 21	177577	
	Pg 29	177578	
MKGV – protective conduit fittings Separable, suitable for protective conduit MKG Polyamide			
	M32x1.5	3152612	1
	M40x1.5	3152613	
MKM – lock nuts Suitable for protective conduit fitting MKRV/MKRL			
	Pg 9	177596	1
	Pg 11	177597	
	Pg 16	177598	
	Pg 21	177599	
	Pg 29	177600	
MKA – Adapter connectors With male and female threads			
	M32x1.5	1879672	1
	M40x1.5	1879673	
	Pg 21/Pg 16	193948	
	Pg 21/Pg 29	177594	
	Pg 29/Pg 16	193949	
	Pg 29/Pg 21	177595	
MKRT – Protective conduit connectors For protective conduit MKR, to help with accessing the protective tubing system Polyamide			
	Pg 16/Pg 21	194321	1

Fittings for protective conduits

	Threaded connection	TNR	PE
MKY – Y-distributor for distributing lines and tubing Thermoplastic rubber			
	2x Pg 16/Pg 21	193946	1
	2x Pg 21/Pg 29	193947	
MKRS – Retaining clips For junction box HMZV Polyamide			
	Pg 9	192287	1
	Pg 11	192288	
	Pg 16	192289	
	Pg 21	192290	
	Pg 29	192291	



Accessories for pneumatic connection technology

Our comprehensive range of accessories for pneumatic connection technology includes union nuts, quick connectors, sealing caps, distributors, multiple distributors, ring pieces and hollow bolts, tools such as connecting and disconnecting pliers or tubing and pipe cutters, as well as sealing rings from different materials. Hose clips, tubing straps and tubing supports complete our range of our accessories.

Sealing material _____ **296**

Sealing rings

Sealing ring assortment

Sealing tape

Cutting tools for tubing _____ **300**

Pipe and tubing cutters

Connecting pliers

Tubing straps, hose clips

Pipe clamps

Additional information:→ www.festo.com/fitting

Sealing material

for thread M3, M5, M7, G1/8, G1/4, G3/8, G1/2, G3/4, G1

Materials: polyvinyl chloride, polyvinylidene fluoride, nitrile rubber, thermoplastic polyurethane, polyether ether ketone (PEEK)



Sealing ring

297



Sealing ring assortment

298



Thread sealing tape

299

Sealing rings

	For thread	Nominal tightening torque [Nm]	TNR	PE
O – polyvinyl chloride				
M3: polyamide				
	M5	1.78	3565	1
	G1/8	10.55	2223	
	G1/4	9.05	2224	
	G3/8	38.5	2225	
	G1/2	47.9	2226	
	G3/4	45	2227	
	G1	–	210893	
	M3		30290	100
	G1/2	47.9	534230	
	G1/4	9.05	534228	200
	G3/8	38.5	534229	
	G1/8	10.55	534227	500
	M5	1.78	534226	
CRO – polyvinylidene fluoride				
Suitable for use in the chemical and food processing industries				
	M5	–	165191	1
	G1/4		165193	
	G3/8		165194	
	G1/2		165195	
	G3/4		165196	
	G1		165197	
	G1/8		575895	
OL – Nitrile rubber				
with metal bodies, based on ISO 16030, reusable				
	M5	2.5	34634	1
	M6		161180	
	M7	3	8153155	500
	M5	2.5	534231	
OL – Nitrile rubber				
with metal bodies, based on ISO 16030, reusable				
	G1/8	6	33840	1
	G3/4	23	34638	
	G1/4	10	34635	
	G3/8	13	34636	
	G1/2	23	34637	
	G1		8153156	
	G1/2		534235	100
	G1/4	10	534233	200
	G3/8	13	534234	
	G1/8	6	534232	500

Sealing rings

	For thread	Nominal tightening torque [Nm]	TNR	PE
OK – nitrile rubber				
Stainless steel support ring				
	M3	0.48	130849	1
	M5	1.33	130850	
	M7	3.35	130851	
OK – thermoplastic polyurethane				
Polyamide support ring				
	G1/4	11	531772	1
	G1/8	3.5	531771	
	G3/8	12.5	531773	
	G1/2	14	531774	
	G3/4	35	531775	
NPAS – polyether ether ketone				
For quick connectors NPCK				
	G1/4	20	2652517	10
	G3/8	35	2652519	
	G1/8	6.5	2652516	

Sealing ring assortment

	Contents	TNR	PE
OL-S1 – OL sealing rings			
Sealing ring box contains OL sealing rings in sizes M5 to G3/4			
	50x M5, 100x G1/8, 100x G1/4, 40x G3/8, 30x G1/2, 10x G3/4	161355	1
OK-S1 – OK sealing rings			
Sealing ring box contains OK sealing rings in sizes M3 to G3/4			
	50x M3, 100x M5, 50x M7, 100x G1/8, 100x G1/4, 40x G3/8, 30x G1/2, 10x G3/4	570465	1

Sealing band

	Length [m]	Width [mm]	TNR	PE
GWB - Thread sealing tape				
	12000	12	9076	1

Tools and accessories

for tubing and pipes



Pipe and tubing cutters

301



Tubing straps, hose clips

301



Pipe clamps

302

Cutting tools for tubing

	Size	TNR	PE
ZRS – Pipe and tubing cutter For plastic tubing with and without fabric reinforcement			
	For tubing O.D. 2 - 20 mm	7658	1
	Spare blades for pipe and tubing cutter	218606	10
ZR – pipe cutter For plastic pipes PQ-PA			
	For tubing O.D. 12 - 28 mm	194592	1

Cutting tools for tubing

	I.D. [mm]	TNR	PE
PAN-VOS – tubing cutter For flame-retardant tubing PAN-V0			
	12	133184	1
	4	133180	
	8	133182	
	6	133181	
	10	133183	

Tubing support

	For D2	TNR	PE
PKB – spiral tubing binder			
	For tube bundle Ø max. 50 mm	3656	50
PKS – tubing support			
	6	4132	10
	5/16"	4133	
	10	4134	
NPAW – tubing support			
	For tube bundle Ø max. 50 mm	554028	10
	For tube bundle Ø max. 30 mm	554026	
	For tube bundle Ø max. 50 mm	554027	

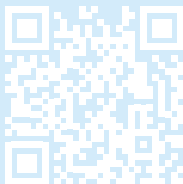
Tubing support

	For D2	TNR	PE
Multi-tube holder – KK			
	3/16"	2147	10
		3635	
	16	4463	
	5/16"	2148	
	10	2149	

Pipe clamps

	Nominal width [mm]	TNR	PE
PQ-RK – Pipe clamps			
Polypropylene			
	25	550599	1
	12	550595	10
	15	550596	
	22	550598	
	18	550597	

→ www.festo.com/support





Highlights

of our vacuum technology



Vacuum generator

OVEL ★

- + Affordable and compact
- + Piezoresistive pressure sensor with display
- + Setting options via teach-in, IO-Link® or display and buttons

→ 310



Vacuum generator

VN ★

- + Pneumatic or electropneumatic
- + Generate a vacuum quickly and easily
- + Lightweight design for installing in the gripping area

→ 310



Suction cup with connector

VAS, VASB ★

- + Sturdy and reliable
- + Suction cup with connector with fixed connecting thread

→ 312



Our products from the Core Range ★

Vacuum generators OVEL ★

- + Compressed air is supplied by solenoid valve with NC switching function (normally closed when de-energised)
- + With ejector pulse for safe release of the workpiece from the suction cup and for accelerated reduction of the vacuum
- + With pressure sensor for monitoring, with different switching outputs as well as LCD display, IO-Link® and teach function

Vacuum generators OVEL _____ 310

Vacuum generators VN ★

- + Low weight and minimal space requirement
- + Variants designed for high vacuum are optimised for generating a high vacuum at comparatively low suction flow rates
- + Variants with high suction flow rates are optimised for very short evacuation times at relatively low vacuum

Vacuum generators VN _____ 310

Suction cup with connector VAS, VASB ★

- + Nitrile rubber, polyurethane, silicone
- + Diameter 15, 30, 40, 55 mm
- + Vacuum port G1/8, G1/4

Suction cup with connector VAS, VASB _____ 312

Length compensator VAL ★

- + For gentle handling of workpieces by compensating for differences in the thickness of the workpiece

Length compensator VAL _____ 313

Additional information:

→ www.festo.com/vacuum





Additional information:

→ www.festo.com/vacuum



Vacuum generators

OVEL ★, VN ★

Grid dimension 13, 14, 15, 18 mm

Nominal width of Laval nozzle 0.7, 0.95, 1.4 mm

Suction cup with connector

VAS, VASB ★

Suction cup with connector Ø 15, 30, 40, 55 mm

Material of suction cup with connector VQM (silicone), NBR (nitrile rubber), PUR (polyurethane)

In blue, black or transparent



Vacuum generators, high vacuum OVEL **310**



Vacuum generators, pneumatic, electro-pneumatic VN **310**



Suction cup with connection VAS, VASB **312**



Compensating elements VAL **313**

Vacuum generators, high vacuum

	Grid dimension [mm]	Nominal width of Laval nozzle [mm]	Pressure measuring range [MPa]	Vacuum port	TNR	PE
OVEL Grid dimension 15 mm, switching output PNP/NPN switchable, electrical connection: plug pattern H, vertical plug, connection exhaust: silencer open						
	15	0.95	-0.1 - 0	For tubing O.D. 6 mm	★ 8049054	1
		0.7		4	★ 8049053	
		0.95	-0.1 - 0.1	For tubing O.D. 6 mm	★ 8069572	
		0.7		4	★ 8069571	

Vacuum generators, pneumatic

	Grid dimension [mm]	Nominal width of Laval nozzle [mm]	Vacuum port	D3	TNR	PE
VN - straight shape, inline High vacuum						
	13	0.7	QS-6	Not ducted	★ 193553	1
			6		★ 193556	
VN – T shape high vacuum/standard						
	14	0.95	QS-6	QS-6	★ 193480	1
			G1/8	G1/8	★ 193500	
	18	1.4	G1/4	G1/4	★ 193502	

Vacuum generators, pneumatic

	Grid dimension [mm]	Nominal width of Laval nozzle [mm]	Vacuum port	D3	TNR	PE
VN – T shape High suction rate						
	18	1.4	QS-8	QS-8	★ 193565	1

Vacuum generators, electropneumatic

	Grid dimension [mm]	Nominal width of Laval nozzle [mm]	Vacuum port	D3	TNR	PE
VN – T shape High suction rate/standard, electric on/off valve, pneumatic ejector pulse Electrical connection: Plugs, Pneumatic connection, port 3: open silencer						
	18	1.4	QS-8	Open silencer	★ 532649	1
	14	0.95	QS-6		★ 532641	

Suction cup with connection

	Suction cup Ø [mm]	Vacuum port	Suction cup material	Colour	TNR	PE
VAS – round, flat						
	30	G1/8	NBR	Black	★ 34587	1
	40	G1/4	PUR	Blue	★ 1396092	
	30	G1/8	VMQ (sili-cone)	Trans-parent	★ 1377752	
	15				★ 1376604	
VASB – round protective bellows 1.5 convolutions						
	15	G1/8	PUR	Blue	★ 1395671	1
	55	G1/4			★ 1396063	
	15	G1/8	VMQ (sili-cone)	Trans-parent	★ 1377689	

Compensating elements

	Vacuum port	TNR	PE
VAL – length compensator			
	M5	★ 151209	1
	G1/8	★ 151210	
	G1/4	★ 151211	



Highlights

from our range of stop valves



Quick exhaust valves

VBQF

- + Connection for female thread
G1/8, G1/4
 - + Ducted or unducted exhaust air
- 327



Shut-off valve

VBOC

NEW: New series

- + Connection G1/8, G1/4, G3/8, G1/2
 - + For applications with limited installation spaces
- 328



Hand slide valves

VBOH

- + Connection M5, G1/8, G1/4, G3/8, G1/2, G3/4
- 331

NEW



Stop valves – Turning compressed air on and off

Whether used in maintenance tasks, for rapid stopping during horizontal movements or as part of a backup system in the event of a pressure failure, stop valves from Festo are the obvious choice for applications requiring the complete shut-off of the flow rate thanks to their impressive ability to close and quickly restore the compressed air supply

- + Piloted check valves HGL are activated as soon as there is no control signal
- + Quick exhaust valves SE/SEU/VBQF for increased speeds with single-acting or double-acting cylinders. Quick exhaust valves SE with ducted exhaust air
- + **NEW** Shut-off valve VBOC: The piloted shut-off valve can be mounted directly on pneumatic actuators. The product provides the option to minimize potential risks in safety-related applications and to fulfil the EC Machinery Directive 2006/42/EC in factory automation.
- + Ball valves QH, shut-off valves HE and hand slide valves VBOH for shutting off the compressed air
- + Piloted check valves VBNF with manual exhaust function

Look for our products from the Core Range ★

Stop valves selection aid _____ **318**

Additional information:

→ www.festo.com/shut-off-valves



	Type, description
	H-QS, HA, HB, H, check valves HGL-QS, HGL, piloted check valves With connecting thread or QS push-in connection Manual override
	VBNF, piloted check valves With connecting thread or QS push-in connection With piloted non-return function
	SEU, SE, VBQF, quick exhaust valves With or without silencer Ducted exhaust air
	VBQF, quick exhaust valves, flat design Ducted exhaust air With silencer
	VBOC, shut-off valve NEW: New series 2/2-way valve for direct mounting on the cylinder with switching position monitoring Suitable for safety functions according to DIN 13894 Extremely sturdy in the event of pressure surges from the cylinder Optional: fully integrated additional functions Pneumatically actuated

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	Type, description
	HE, shut-off valves With connecting thread or QS push-in connection
	VBOH, hand slide valves With connecting thread
	QH, QHS, manually actuated ball valves With connecting thread or QS push-in connection With bulkhead fitting

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Check valves

	D1	D2	qnN [l/min]	TNR	PE
H-QS – QS push-in connector					
Both ends					
	QS-4	QS-4	136	153462	1
	QS-6	QS-6	282	153463	
	QS-8	QS-8	681	153464	
	QS-10	QS-10	1480	153465	
	QS-12	QS-12	1715	153466	
HA – Male thread/QS push-in connector					
Flow direction: male thread → QS push-in connector					
	M5	QS-4	148	153444	1
	R1/8		138	153446	
			QS-6	311	
	R1/4	QS-8	331	153452	
		QS-6	302	153450	
	R3/8	QS-8	670	153454	
		QS-10	1740	153456	
	R1/2	QS-12	1876	153458	
			2230	153460	
HB – QS- push-in connector/male thread					
Flow direction: QS-push-in connector → male thread					
	QS-4	M5	144	153445	1
		R1/8	142	153447	
	QS-6		335	153449	
		R1/4	294	153451	
	QS-8	R1/8	314	153453	
		R1/4	696	153455	
	QS-10	R3/8	1700	153457	
	QS-12		1886	153459	
		R1/2	2206	153461	
H – Female thread					
With female thread at both ends					
	M5	M5	115	3671	1
H – Male/female thread					
With female and male thread					
	G1/8	G1/8	280	3324	1

Check valves

	D1	D2	qnN 1→2 from 6 bar to 5 bar [l/min]	TNR	PE
H – male thread					
Both ends					
	G1/4	G1/4	1000	11689	1
	G3/8	G3/8	2000	11690	
	G1/2	G1/2	5500	11691	
	G3/4	G3/4	5900	11692	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/h-1



Check valves, piloted

	D1	D2	D2	qnN 1→2 from 6 bar to 5 bar [l/ min]	TNR	PE
HGL – Female/male thread						
	M5	M5	M5	130	★ 530029	1
HGL – Female/male thread						
With female and male thread						
	G1/8	M5	M5	300	★ 530030	1
		G1/8	G1/8		543253	
	G1/4			550	★ 530031	
	G3/8	G1/4	G1/4	1100	★ 530032	
	G1/2	G3/8	G3/8	1600	★ 530033	

Check valves, piloted

	D1	D2	D2	qnN 1→2 from 6 bar to 5 bar [l/ min]	TNR	PE
HGL – QS push-in connector/male thread						
	QS-4	QS-4	QS-4	130	★ 530038	1
HGL – QS push-in connector/male thread With male thread and QS push-in connector						
	QS-4	M5	M5	200	★ 530039	1
	QS-6			270	★ 530040	
	QS-8	G1/8	G1/8	390	★ 530041	
		G1/4	G1/4	830	★ 530043	
	QS-10	G1/8	G1/8	400	★ 530042	
		G1/4	G1/4	890	★ 530044	
	QS-12	G3/8	G3/8	1400	★ 530045	

Accessories

	D1	D2	qnN exhaust 0.6MPa → 0.5MPa [l/ min]	TNR	PE
HAB – Manual override, male/female thread For check valve HGL					
	G1/8	G1/8	165	184585	1
	G1/4	G1/4		184586	
	G3/8	G3/8		184587	
	G1/2	G1/2		184588	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/hgl



Check valves, piloted

	D1	D2	qnN 1→2 from 6 bar to 5 bar [l/min]	TNR	PE
VBNF-CBA – QS push-in connector					
At both ends					
Inline					
	QS-4	QS-4	130	8193271	1
	QS-6	QS-6	260	8193270	
VBNF-LBA – QS-push-in connector/male thread					
L-shape					
	QS-4	G1/8	260	8193272	1
	QS-6			8001460	
	QS-8	G1/4	620	1927027	

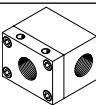
Configurable products



This product and all its product options can
be ordered online via the configurator:
www.festo.com/catalogue/vbnf



Quick exhaust valves, compact design

	D1	D2	D3	qnN exhaust 0.6MPa → 0.5MPa [l/min]	TNR	PE
SE						
Ducted exhaust air						
	G1/8	G1/8	G1/8	660	9685	1
	G1/4	G1/4	G1/4	1200	9686	
	G3/8	G3/8	G3/8	2760	9687	
	G1/2	G1/2	G1/2	6480	9688	
SE						
Ducted exhaust air						
	G3/4	G3/4	G3/4	7500	2280	1
SEU						
With silencer						
	G1/8	G1/8	—	550	4616	1
	G1/4	G1/4		1100	6753	
	G3/8	G3/8		2280	6755	
	G1/2	G1/2		4020	6822	

Configurable products



This product and all its product options can
be ordered online via the configurator:
www.festo.com/catalogue/seu



Quick exhaust valves, flat design

	D1	D2	D3	TNR	PE
VBQF-D					
Ducted exhaust air					
	G1/8	G1/8	G1/8	547533	1
	G1/4	G1/4	G1/4	548003	
	QS-6	G1/8	QS-8	547534	
VBQF-U					
With silencer					
	G1/8	G1/8	—	547531	1
	G1/4	G1/4		548001	
	QS-6	G1/8		547532	
	QS-8	G1/4		548002	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/vbqf



Shut-off valves, 2/2 way

	D1/D2	qnN in flow con- trol direc- tion [l/ min]	Electrical con- nection 1	TNR	PE
VBOC-L2-E-P					
Basic valves with adjustable exhaust one-way flow control function					
	G1/8	292	M8x1 A-coded according to EN 61076-2-104	8177460	1
	G1/4	546		8177463	
	G3/8	1104		8177469	
	G1/2	1743		8177467	
	G1/8	292	M12x1 A-coded according to EN 61076-2-101	8177447	
	G1/4	546		8177448	
	G3/8	1104		8177449	
	G1/2	1743		8177450	
VBOC-L2-P					
Basic valves: shut-off valves with diagnostic function (switching position sensing)					
	G1/8	292	M8x1 A-coded according to EN 61076-2-104	8177462	1
	G1/4	546		8177464	
	G3/8	1104		8177470	
	G1/2	1743		8177468	
	G1/8	292	M12x1 A-coded according to EN 61076-2-101	8177451	
	G1/4	546		8177452	
	G3/8	1104		8177453	
	G1/2	1743		8177454	
VBOC-L2-S7-P					
Basic valves with manual exhaust function					
	G1/8	292	M8x1 A-coded according to EN 61076-2-104	8179237	1
	G1/4	546		8180683	
	G3/8	1104		8180903	
	G1/2	1743		8181283	
	G1/8	292	M12x1 A-coded according to EN 61076-2-101	8181754	
	G1/4	546		8180685	
	G3/8	1104		8180904	
	G1/2	1743		8181284	

Shut-off valves, 2/2 way

	D1/D2	qnN in flow con- trol direc- tion [l/ min]	Electrical con- nection 1	TNR	PE
VBOC-L2-E-S7-P Basic valves with adjustable exhaust one-way flow control function and manual exhaust function					
	G1/8	292	M8x1 A-coded according to EN 61076-2-104	8177459	1
	G1/4	546		8177461	
	G3/8	1104		8177466	
	G1/2	1743		8177465	
	G1/8	292	M12x1 A-coded according to EN 61076-2-101	8177443	
	G1/4	546		8177444	
	G3/8	1104		8177445	
	G1/2	1743		8177446	

Configurable products



This product and all its product options can
be ordered online via the configurator:
www.festo.com/catalogue/vboc



Shut-off valves, 2/2-way

	D1	D2	qnN [l/min]	TNR	PE
HE-2-QS – QS push-in connector					
Both ends					
	QS-6	QS-6	256.5	153467	1
	QS-8	QS-8	415.8	153468	
	QS-10	QS-10	752.4	153469	
	QS-12	QS-12	788.4	153470	
HE-2-...-QS – Male thread/QS push-in connector					
With male thread and QS push-in connector					
	R1/8	QS-6	279.9	153471	1
	R1/4	QS-8	423.9	153472	
	R3/8	QS-10	760.5	153473	
	R1/2	QS-12	834.3	153474	

Shut-off valves, 2/3-way

	D1	D2	qnN [l/min]	TNR	PE
HE-3-QS – QS push-in connector					
Both ends					
	QS-6	QS-6	256.5	153475	1
	QS-8	QS-8	415.8	153476	
	QS-10	QS-10	752.4	153477	
	QS-12	QS-12	788.4	153478	
HE-3-...-QS – Male thread/QS push-in connector					
With male thread and QS push-in connector					
	R1/8	QS-6	279.9	153479	1
	R1/4	QS-8	423.9	153480	
	R3/8	QS-10	760.5	153481	
	R1/2	QS-12	834.3	153482	
HE-3 – Male thread					
Both ends					
	R1/8	R1/8	369.9	153296	1
	R1/4	R1/4	625.5	153297	
	R3/8	R3/8	797.4	153298	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/he



Hand slide valves

	D1	D2	qnN [l/min]	TNR	PE
VBOH – Female thread					
Both ends					
	M5	M5	236	1609969	1
	G1/8	G1/8	777	1558073	
	G1/4	G1/4	1675	1302994	
	G3/8	G3/8	2201	1482679	
	G1/2	G1/2	3420	1587988	
	G3/4	G3/4	7691	1629664	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/vboh



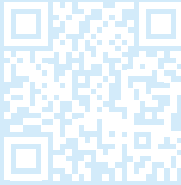
Ball valves with plastic housing

	D1	D2	qnN [l/min]	TNR	PE
QH-QS – QS push-in connector					
Both ends					
	QS-4	QS-4	148	153483	1
	QS-6	QS-6	533	153484	
QH-QS – Male thread/QS push-in connector					
With male thread and QS push-in connector					
	R1/8	QS-4	235	153486	1
		QS-6	560	153487	
QHS-QS – Bulkhead fitting, QS push-in connector					
With male thread and QS push-in connector, bulkhead fitting					
	QS-6	QS-6	528	153485	1

Ball valves with brass housing

	D1	D2	qnN [l/min]	TNR	PE
QH – Female thread					
With hand lever					
	G1 1/2	G1 1/2	84000	6837	1
	G1/4	G1/4	3400	9541	
	G3/8	G3/8	7500	9542	
	G1/2	G1/2	11500	9543	
	G3/4	G3/4	21000	9544	
	G1	G1	33000	9545	

→ www.festo.com/service2see





Highlights

from our range of pressure regulators



Pressure regulator

VRPA

- + Regulates the operating pressure independently of the fluctuating input pressure
- + With secondary exhaust and with return flow function
- + With or without pressure gauge
- + Screw-in or inline variants

→ 340



Pressure regulators – optimum characteristics

You need your system to operate at peak performance every day. Thanks to pressure control valves and differential pressure regulators, your system always operates optimally. They guarantee the system is supplied with the correct pressure, regardless of the input pressure, and compensate for pressure peaks on the supply side.

- + Pressure regulator VRPA – our classic in a new design
- + Differential pressure regulators LRL... and LRLL... maintain a manually set differential pressure between the input pressure at the screw-in thread and the output pressure at the QS connection.

Pressure regulator selection aid _____ **338**

Additional information:

→ www.festo.com/pressure-control-valves



	Type, description
	VRPA, inline pressure regulator with or without pressure gauge QS push-in connector at both ends
	VRPA, pressure regulator, elbow outlet With pressure gauge With male thread and QS push-in connector
	LRL, LRLL, differential pressure regulators With male thread and QS push-in connector at the top With male thread and QS push-in connector at the side

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Pressure regulator, inline

	D1	D2	qnN [l/min]	TNR	PE
VRPA-C – QS push-in connector					
Without pressure gauge					
	QS-4	QS-4	80	8086000	1
	QS-6	QS-6	90	8086001	
	QS-8	QS-8	130	8086002	
VRPA-CM – QS push-in connector					
With pressure gauge, pressure gauge scale in MPa					
	QS-4	QS-4	80	8086003	1
	QS-6	QS-6	90	8086004	20
	QS-8	QS-8	125	8086005	1

Pressure regulator, L-shape

	D1	D2	qnN [l/min]	TNR	PE
VRPA-LM – Male thread/QS push-in connector With pressure gauge, pressure gauge scale in MPa					
	M5	QS-4	80	8086007	1
		QS-6	90	8086008	
	R1/8	QS-4		8086009	
		QS-6	100	8086010	
		QS-8	110	8086011	
	R1/4	QS-6	115	8086012	1
		QS-8	130	8086013	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/vrpa



Differential pressure regulators

	D1	D2	qnN open [l/ min]	TNR	PE
LRL – Male thread/QS push-in connector on top					
Rotatable 360°					
	M5	QS-4	30	153510	1
		QS-6		153512	
	G1/8	QS-4	96	153511	
		QS-6	115	153513	
		QS-8	120	153515	
	G1/4	QS-6	241	153514	
		QS-8	224	153516	
		QS-10	231	153518	
	G3/8	QS-8	463	153517	
		QS-10	476	153519	
		QS-12	438	153520	
	G1/2		760	153521	
LRLl – Male thread/QS push-in connector at the side					
Rotatable 360°					
	M5	QS-4	30	153498	1
		QS-6	32	153500	
	G1/8	QS-4	100	153499	
		QS-6	155	153501	
		QS-8	115	153503	
	G1/4	QS-6	267	153502	
		QS-8	268	153504	
		QS-10	269	153506	
	G3/8	QS-8	474	153505	
		QS-10	456	153507	
		QS-12	518	153508	
	G1/2		730	153509	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/lrl





Highlights

from our range of flow control valves



One-way flow control valves

VFOE★

- + Low-cost solution for standard applications
- + Simple and reliable adjustment of the speed of a pneumatic cylinder

→ 356



One-way flow control valves

GRLA★, GRLZ★

- + Large selection of connections
- + Actuation with slotted head screw, knurled screw or external hex

→ 358, 360



One-way flow control valves

VFOF

- + Exhaust air one-way flow control function, actuation with internal hex
- + Piloted non-return function, manual exhaust function

→ 363



One-way flow control valves – the right setting is crucial!

Adjusting the flow rate is easy, for example when metering and controlling the supply air or exhaust air flow to regulate the speed of single- or double-acting cylinders. The compact and sturdy one-way flow control valves from Festo provide the right solution for these requirements. The numerous variants suit every environment and are quick and easy to fit.

- + Quick to install with QS connection technology
- + Very flexible – directly at the cylinder or inline
- + Wide range of variants: GRLA/Z/O; GR/O; VFOE; VFOF
- + Also available as precision flow control valves for extremely precise adjustments

Functional combination – multiple control functions integrated in one component:

Variable piston speeds, temporary intermediate stops and individual manual exhaust save time, costs and space.

Look for our products from the Core Range ★

Flow control valves selection aid _____ **346**

Additional information:

→ www.festo.com/flow-control-valves



	Type, description
Standard, polymer – supply air one-way flow control function	
	VFOE-LS: one-way flow control valve QS push-in connector/male thread
	VFOE-LS-F1A: one-way flow control valve Recommended for production systems for manufacturing lithium-ion batteries QS push-in connector/male thread
Standard, metal – exhaust air one-way flow control function	
	GRLA: one-way flow control valve QS push-in connector/male thread
	GRLA: one-way flow control valve Female thread/male thread
	GRLA: one-way flow control valve Barbed connector PK/male thread
	GRLSA: one-way flow control valve with scale Preselection of the flow rate range in 5 steps using a rotary switch Precision adjustment with internal hex QS push-in connector/male thread
Standard, metal – supply air one-way flow control function	
	GRLZ: one-way flow control valve QS push-in connector/male thread
	GRLZ: one-way flow control valve Female thread/male thread

Selection aid – One-way flow control valves

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<u>Elbow outlet, actuation with knurled screw ★</u>	→ 358
<u>Elbow outlet, slotted head screw as adjusting element</u>	→ 359
<u>Elbow outlet, knurled screw as adjusting element</u>	→ 359
<u>Elbow outlet, slotted head screw as adjusting element</u>	→ 359
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<u>Elbow outlet, slotted head screw as adjusting element</u>	→ 360
<u>Elbow outlet, knurled screw as adjusting element</u>	→ 360

	Type, description
Standard, nickel-plated metal – exhaust air one-way flow control function	
	VFOH-LE: one-way flow control valve QS push-in connector/male thread
Standard, polymer – exhaust air one-way flow control function	
	VFOE-LE: one-way flow control valve QS push-in connector/male thread
	VFOE-LE-F1A: one-way flow control valve Recommended for production systems for manufacturing lithium-ion batteries QS push-in connector/male thread
Mini, metal – exhaust air one-way flow control function	
	GRLA: one-way flow control valve QS push-in connector/male thread
	GRLA: one-way flow control valve Female thread/male thread
Mini, metal – supply air one-way flow control function	
	GRLZ: one-way flow control valve QS push-in connector/male thread
	GRLZ: one-way flow control valve Female thread/male thread
Corrosion-resistant – exhaust air one-way flow control function	
	CRGRLA: one-way flow control valve Female thread/male thread

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<u>Elbow outlet, slotted head screw as adjusting element</u>	→ 362
<u>Elbow outlet, slotted head screw as adjusting element</u>	→ 362

	Type, description
Functional combination, polymer – exhaust air one-way flow control function	
	VFOF-CE: one-way flow control valve Inline QS push-in connector, both sides Piloted non-return function, manual exhaust function
	VFOF-LE: one-way flow control valve L-shape Male thread/QS push-in connector Piloted non-return function, manual exhaust function
Shut-off/flow control valves with roller lever	
	GG: one-way flow control valve Adjustable basic flow rate Pneumatic connection G1/4
	GGO: one-way flow control valve Adjustable basic flow rate Pneumatic connection G1/4
	GRR: one-way flow control valve Adjustable output flow rate Pneumatic connection G1/2
Shut-off/flow control valves on adapter plate for mounting frame 2N	
	GRF-PK-3: one-way flow control valve M5 compact system 1 one-way flow control valves on one sub-base Pneumatic connection PK-3
	GRF-PK-3X2: one-way flow control valve M5 compact system 2 one-way flow control valves on one sub-base Pneumatic connection PK-3

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<u>Roller lever as adjusting element</u>	→ 364
<u>Roller lever as adjusting element</u>	→ 364
<u>Knurled screw as adjusting element</u>	→ 364
<u>Knurled screw as adjusting element</u>	→ 364

	Type, description
Line installation, metal – supply air one-way flow control function	
	GR, GRA: one-way flow control valve Female thread/female thread
	GR-...X2: one-way flow control valve Two one-way flow control valves in one housing Supply and exhaust air flow control separately adjustable Female thread
Line installation, polymer – one-way flow control function	
	GR: one-way flow control valve QS push-in connector
Precision flow control valve, metal - one-way flow control function	
	GRP-...-AL: precision one-way flow control valve Sub-base Female thread
	GRP-...-PK: precision one-way flow control valve Front panel mounting Barbed connector PK
Flow control/silencer combination	
	GRE: exhaust air flow control valve Male thread
	VFFK, GRU: flow control/silencer Male thread Polymer cushioning insert

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	Type, description
Standard, metal – flow control valve function	
	GRLO: flow control valve Female thread/male thread
	GRLO: flow control valve Barbed connector PK/male thread
Mini, metal – flow control valve function	
	GRLO: flow control valve Female thread/male thread
	GRLO: flow control valve QS push-in connector/male thread
Line installation, metal – flow control valve function	
	GRO-B: flow control valve Female thread
	GRO: flow control valve Female thread
Line installation, polymer – flow control valve function	
	GRO: flow control valve QS push-in connector
Metal – flow control valve function	
	GRPO-...-AL: precision flow control valve On sub-base Female thread
	GRPO-...-PK: precision flow control valve for front panel mounting Barbed connector PK

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<u>Knurled screw as adjusting element</u>	→ 369
<u>Rotary knob with scale as adjusting element</u>	→ 370
<u>Rotary knob with scale as adjusting element</u>	→ 370

Standard, polymer

	D1	D2	qnN in flow control direc- tion [l/min]	TNR	PE
VFOE-LE – Exhaust air one-way flow control function					
QS push-in connector/male thread, adjusting element, rotary knob with latch					
	QS-4	M5	90	★ 8068723	1
				8095432	50
		R1/8	150	★ 8068734	1
		G1/8		★ 8068725	
	QS-6	M5	105	★ 8068724	
		R1/8	165	★ 8068735	
		R1/4	400	★ 8068737	
		G1/8	165	★ 8068726	
				8095433	50
		G1/4	400	★ 8068728	1
		QS-8	R1/8	170	★ 8068736
	R1/4		500	★ 8068738	
	R3/8		720	★ 8068740	
	G1/8		170	★ 8068727	
	G1/4		500	★ 8068729	
				8095434	50
	G3/8		720	★ 8068731	1
	QS-10	R1/4	500	★ 8068739	
		R3/8	750	★ 8068741	
		G1/4	500	★ 8068730	
		G3/8	750	★ 8068732	
				8095435	20
VFOE-LS – Supply air one-way flow control function					
QS push-in connector/male thread, adjusting element, rotary knob with latch					
	QS-4	M5	85	★ 8068743	1
		M7		★ 8068745	
		R1/8	165	★ 8068750	
		G1/8		★ 8068747	
	QS-6	M5	100	★ 8068744	
		M7		★ 8068746	
		R1/8	170	★ 8068751	
		G1/8		★ 8068748	
	QS-8	R1/8		★ 8068752	
		G1/8		★ 8068749	

Standard, polymer

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
VFOE-LE-F1A – exhaust air one-way flow control valve function Recommended for production systems for manufacturing lithium-ion batteries QS push-in connector/male thread, adjusting element, rotary knob with latch					
	QS-4	M5	90	8157642	1
		R1/8	150	8157640	
	QS-6	M5	105	8157641	
		R1/8	165	8157639	
		R1/4	400	8157637	
	QS-8	R1/8	170	8157638	
		R1/4	500	8157636	
		R3/8	720	8157634	
	QS-10	R1/4	500	8157635	
		R3/8	750	8157633	
VFOE-LS-F1A – Supply air one-way flow control valve function Recommended for production systems for manufacturing lithium-ion batteries QS push-in connector/male thread, adjusting element, rotary knob with latch					
	QS-4	M5	85	8157630	1
		R1/8	165	8157628	
	QS-6	M5	100	8157629	
		R1/8	170	8157627	
	QS-8			8157626	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/vfoe



Standard, metal

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GRLA – Exhaust air one-way flow control function					
QS push-in connector/male thread, adjusting element, slotted head screw					
	QS-3	M5	100	★ 193137	1
		G1/8	130	193142	
	QS-4	M5	110	★ 193138	
		G1/8	160	★ 193143	
	QS-6	M5	115	★ 193139	
		G1/8	185	★ 193144	
		G1/4	400	★ 193146	
		G3/8	495	★ 193149	
	QS-8	G1/8	215	★ 193145	
		G1/4	475	★ 193147	
		G3/8	820	★ 193150	
	QS-10	G1/4	480	★ 193148	
G3/8		900	★ 193151		
QS-12	G1/2	1580	★ 193152		
GRLA – Exhaust air one-way flow control function, high flow rate					
QS push-in connector/male thread, adjusting element, slotted head screw					
	QS-6	G1/8	400	537075	1
	QS-8		475	537076	
GRLA – Exhaust air one-way flow control function					
QS push-in connector, male thread, adjusting element, knurled screw					
	QS-3	M5	100	197576	1
		G1/8	130	197579	
	QS-4	M5	110	197577	
		G1/8	160	197580	
	QS-6	M5	115	197578	
		G1/8	185	197581	
		G1/4	400	534338	
		G3/8	495	534341	
	QS-8	G1/8	215	534337	
		G1/4	475	534339	
		G3/8	820	534342	
	QS-10	G1/4	480	534340	
		G3/8	900	534343	
	QS-12	G1/2	1580	534344	

Standard, metal

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GRLA – Exhaust air one-way flow control function Female thread/male thread, adjusting element, slotted head screw					
	M5	M5	95	151160	1
	G1/8	G1/8	340	151165	
	G1/4	G1/4	610	151172	
	G3/8	G3/8	1450	151178	
	G1/2	G1/2	2100	151179	
	G3/4	G3/4	4320	151180	
GRLA – Exhaust air one-way flow control function Barbed connector PK/male thread, adjusting element, slotted head screw					
	PK-4	M5	83	151162	1
	PK-3			151161	
	3	G1/8	110	151166	
	4		230	151167	
		G1/4	260	151173	
	6	G1/8	300	151168	
		G1/4	540	151174	
	GRLA – Exhaust air one-way flow control function Female thread/male thread, adjusting element, knurled screw				
	M5	M5	95	151163	1
	G1/8	G1/8	340	151169	
	G1/4	G1/4	610	151175	
GRLSA – Exhaust air one-way flow control function QS push-in connector/male thread, adjusting element, rotary knob with scale and internal hexagon					
	QS-6	G1/8	0 - 250	540661	1
	QS-8	G1/4	0 - 450	540662	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/grla



Standard, metal

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GRLZ – Supply air one-way flow control function QS push-in connector/male thread, adjusting element, slotted head screw					
	QS-3	M5	100	★ 193153	1
		G1/8	130	193156	
	QS-4	M5	110	★ 193154	
		G1/8	160	★ 193157	
	QS-6	M5	115	★ 193155	
		G1/8	185	★ 193158	
QS-8		215	★ 193159		
GRLZ – Supply air one-way flow control function Female thread/male thread, adjusting element, slotted head screw					
	M5	M5	95	151183	1
	G1/8	G1/8	340	151188	
	G1/4	G1/4	610	151195	
GRLZ – Supply air one-way flow control function Female thread/male thread, adjusting element, knurled screw					
	M5	M5	95	151186	1
	G1/8	G1/8	340	151192	
	G1/4	G1/4	610	151198	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/grlz



Standard, nickel-plated metal

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
VFOH-LE – Exhaust air one-way flow control function QS push-in connector/male thread, adjusting element, external hexagon					
	QS-4	G1/8	180	578797	1
	QS-6		255	578798	
	QS-8		275	578799	
	QS-10	G1/4	530	578800	
			520	578801	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/vfoh



Mini, metal

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GRLA – Exhaust air one-way flow control function QS push-in connector/male thread, adjusting element, slotted head screw					
	QS-3	M3	41	175041	1
		M5	40	175053	
	QS-4			175056	
GRLA- Exhaust air one-way flow control function Female thread/male thread, adjusting element, slotted head screw					
	M3	M3	18	175038	1

Mini, metal

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GRLZ – Supply air one-way flow control function QS push-in connector/male thread, adjusting element, slotted head screw					
	QS-3	M3	41	175043	1
		M5	48	175055	
	QS-4			175058	
GRLZ Supply air flow control, actuated with knurled/slotted head screw With male thread and female thread					
	M3	M3	18	175040	1

Corrosion-resistant

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
CRGRLA – Exhaust air one-way flow control function Female thread/male thread, adjusting element, slotted head screw					
	M5	M5	95	161403	1
	G1/8	G1/8	340	161404	
	G1/4	G1/4	610	161405	
	G3/8	G3/8	1450	161406	
	G1/2	G1/2	2100	161407	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/crgrla



Function combination, polymer

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
VFOF-LE – exhaust air flow control valve function L-shape Male thread/QS push-in connector, adjusting component, internal hex Piloted non-return function, manual exhaust function					
	QS-4	G1/8	240	8193269	1
	QS-6			8001459	
	QS-8	G1/4	590	1927030	

VFOF-CE - Exhaust air flow control valve function Inline QS push-in connector, both sides, Adjustment component hex socket Piloted non-return function, manual exhaust function					
	QS-4	QS-4	120	8193268	1
	QS-6	QS-6	240	8193267	

Configurable products



This product and all its product options can be ordered online via the configurator:
www.festo.com/catalogue/vfof



Shut-off/flow control valves with roller lever

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GG – adjustable basic flow rate The throttled cross-section is released upon actuation Wrought aluminium alloy					
	G1/4	G1/4	870	3633	1

Shut-off/flow control valves with roller lever

	D1	D2	qn in flow control direction [l/min]	TNR	PE
GGO – adjustable basic flow rate The flow cross-section is throttled or closed upon actuation Wrought aluminium alloy					
	G1/4	G1/4	950	3634	1
GRR – adjustable output flow rate The throttled cross-section is released upon actuation Wrought aluminium alloy					
	G1/2	G1/2	1300	2111	1

Shut-off/flow control valves on adapter plate for mounting frame 2N

	D1	D2	qn in flow control direction [l/min]	TNR	PE
GRF-PK-3 – M5 compact system 1 one-way flow control valves on one sub-base Wrought aluminium alloy					
	PK-3	PK-3	45	4565	1
GRF-PK-3X2 – M5 compact system 2 one-way flow control valves on one sub-base Wrought aluminium alloy					
	PK-3	PK-3	45	4566	1

In-line installation, metal

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GR, GRA – One-way flow control function Female thread/female thread, adjusting element, knurled screw					
	M3	M3	29.5	15899	1
	M5	M5	115	151213	
	G1/8	G1/8	210	151215	
	G1/4	G1/4	370	2101	
			420	6509	
	G3/8	G3/8	1010	6308	
	G1/2	G1/2	1620	3720	
	G3/4	G3/4	3300	2103	
GR-...X2 Two one-way flow control valves in one housing Supply and exhaust air flow control separately adjustable, actuated with knurled screw With male and female thread					
	PK-3	PK-3	45	4566	1
	M5	M5	95	152611	
	G1/8	G1/8	205	152612	

In-line installation, polymer

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GR – One-way flow control function QS push-in connector, adjusting element, knurled screw					
	QS-3	QS-3	85	193965	1
	QS-4	QS-4	110	193967	
	QS-6	QS-6	245	193969	
	QS-8	QS-8	265	193970	

Precision one-way flow control valves, metal

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GRP-...-AL – One-way flow control function, sub-base Female thread, adjusting element, rotary knob with scale					
	G1/8	G1/8	40.7	542022	1
			75.8	542023	
GRP-...-PK – One-way flow control function, front panel mounting Barbed connector PK, adjusting element, rotary knob with scale					
	PK-3	PK-3	40.7	10802	1
			3.8	12743	
	PK-4	PK-4	75.8	12961	

Mounting plate

	Number of drilled holes	TNR	PE
APL-2N – Mounting plate For precision one-way flow control valve GRP-...-PK			
	1x mounting hole 22 mm	10391	1
	2x mounting hole 22 mm	10392	

Flow control/silencer combination

	D1	qn 6 → 0 MPa [l/min]	TNR	PE
GRE – Exhaust air flow control valve, flow control/silencer function Male thread, adjusting element, slotted head screw , sintered metal cushioning insert				
	G1/8	0 - 520	10351	1
	G1/4	0 - 996	10352	
	G3/8	3 - 2000	35310	
	G1/2	0 - 4300	10353	
VFFK – Flow control/silencer Male thread, adjusting element, knurled screw, polymer cushioning insert				
	M5	0 - 80	133140	1
	M7	0 - 100	133141	
	R1/8	0 - 270	133142	
	R1/4	0 - 420	133143	
GRU – Flow control/silencer Male thread, adjusting element, slotted head screw , polymer cushioning insert				
	G1/8	0 - 1000	9516	1
	G1/4	0 - 1500	9517	
	G3/8	0 - 1700	9518	
	G1/2	0 - 4000	9519	
	G3/4	0 - 8000	9520	

Standard, metal

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GRLO – Flow control function, with swivel connection Female thread/male thread, adjusting element, slotted head screw					
	M5	M5	95	151181	1
GRLO – Flow control function, with swivel connection Barbed connector PK/male thread, adjusting element, slotted head screw					
	M5	PK-3	83	151182	1

Mini, metal

	D1	D2	qnN in flow control direc- tion [l/min]	TNR	PE
GRLO – Flow control function, with swivel connection Female thread/male thread, adjusting element, slotted head screw					
	M3	M3	18	175039	1
GRLO – Flow control valve function, with swivel connector QS push-in connector/male thread, adjusting element, slotted head screw					
	M3	QS-3	41	175042	1
	M5		40	175054	
		QS-4		175057	

In-line installation, metal

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GRO-B – Flow control function Female thread, adjusting element, knurled screw					
	M5	M5	105	151214	1
	G1/8	G1/8	210	151216	
GRO – Flow control function Female thread, adjusting element, knurled screw					
	G1/4	G1/4	350	2109	1

In-line installation, polymer

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GRO-QS – Flow control function QS push-in connector, adjusting element, knurled screw					
	QS-3	QS-3	85	193971	1
	QS-4	QS-4	110	193972	
	QS-6	QS-6	245	193973	

Accessories

	For type	TNR	PE
GR-H-QS – Retaining bracket for flow control valves GR-QS, POM Linking of several retainers via dovetail slot			
	GR-QS-6, GR-QS-8	195496	1
	GR-QS-3, GR-QS-4	195495	
GRM – Hex nut for flow control valve GR, for front panel mounting, steel			
	GR-1/8-B, GR-1/8X2-B, GR-QS-6, GR-QS-8	2107	1
	GR-M5-B, GR-M5X2-B, GR-QS-3, GR-QS-4	6444	
	GRA-1/4-B, GR-3/8-B	204596	
GRK – Cover cap for flow control valves GRO-QS, PP			
	GR-1/8-B, GR-1/8X2-B, GR-QS-6, GR-QS-8	2105	1
	GR-M5-B, GR-M5X2-B, GR-QS-3, GR-QS-4	6436	
	GRA-1/4-B, GR-3/8-B	6309	

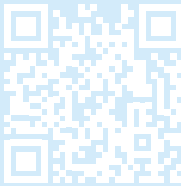
Precision flow control valves, metal

	D1	D2	qnN in flow control direction [l/min]	TNR	PE
GRPO-...-AL – Flow control function					
On sub-base					
Female thread, adjusting element, rotary knob with scale					
	G1/8	G1/8	40.7	542024	1
			75.8	542025	
GRPO-...-PK – Flow control function					
For front panel mounting					
Barbed connector PK, adjusting element, rotary knob with scale					
	PK-3	PK-3	40.7	10803	1
			3.8	13229	
	PK-4	PK-4	75.8	13230	

Mounting plate

	Number of drilled holes	TNR	PE
APL-2N – Mounting plate For precision flow control valve GRPO-PK			
	1x mounting hole 22 mm	10391	1
	2x mounting hole 22 mm	10392	

→ www.festo.com/support





Highlights

from our range of compressed air filters – individual units



Micro filter

PFML

- + For high-pressure applications
- + Pressure range up to 5 MPa
- + Food-safe see www.festo.com/certificates/PFML

→ 376



Filter silencer

LFU

- + Removes up to 99.99% of oil and other contaminants from the exhaust air
- + Condensate drain manual
- + Reduces exhaust noise regardless of frequency

→ 376



Additional information:

→ www.festo.com/catalogue/pfml



→ www.festo.com/catalogue/lfu



Micro filter PFML – for high-pressure applications

Micro filter with filter cartridges made from thermally fused microfine borosilicate and stable polyester fibres. Direction of flow through the filter cartridges is from the inside to the outside.

Condensate drain via connecting thread G1/2 underneath the filter bowl, differential pressure sensing available via two connecting threads G1/8 each on the front and the rear.

- + Size 90 mm, 186 mm
- + Grade of filtration 0.01 µm
- + Flow rate 3406 ... 138233 l/min
- + Operating pressure 0 ... 5 MPa

Micro filter PFML _____ **376**

Accessories – filter cartridge, series L _____ **376**

Filter silencer LFU

The filter silencer cleans the collected exhaust air from pneumatic control systems. The exhaust air escapes into the atmosphere via a fine filter insert (filter efficiency > 99.99%).

At the same time, the noise from the exhaust air is greatly reduced. Any condensate is collected in the plastic bowl underneath and can be drained off via the condensate drain.

- + Size G1/4, G3/8, G1/2, G1
- + Flow rate 4000 ... 12500 l/min
- + Operating pressure 0 ... 1.6 MPa

Filter silencer LFU _____ **376**

Accessories – filter cartridge _____ **377**

Micro filter

	Size	qn max. [l/min]	Grade of filtra- tion [µm]	TNR	PE
PFML - L series Fibre filter for high-pressure applications up to 5 MPA (50 bar), manual condensate drain, in-line installation					
	186	18980	0.01	1624062	1
	90	10220		1612487	
	186			1364705	

Accessories for micro filters

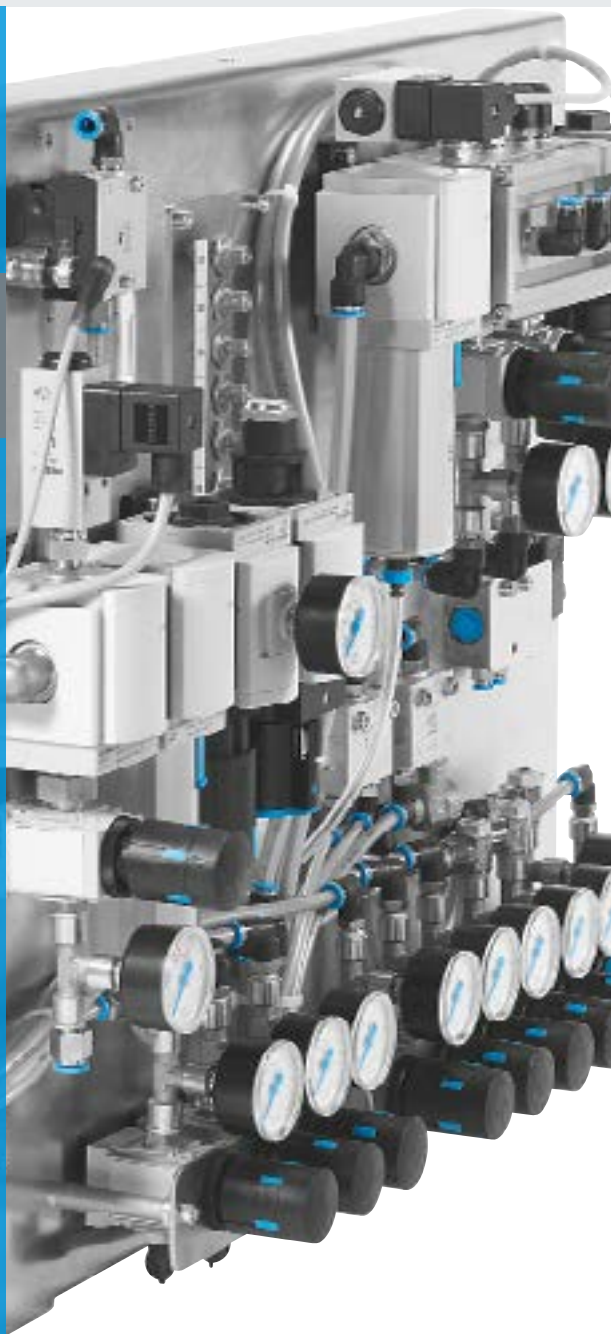
	Flow rate	Grade of filtration [µm]	TNR	PE
PFEL – filter cartridge, L series				
	Standard	0.01	1334716	1
	High flow rate		1471578	

Filter silencer

	D1	q [l/min]	Grade of filtra- tion [µm]	TNR	PE
LFU Manual rotary condensate drain, can be screwed in					
	G1/4	4000	1	539132	1
	G3/8	4700		539133	
	G1/2	6000	–	10494	
	G1	12500		10495	

Accessories for filter silencers

	For threaded connection	TNR	PE
LFPU – filter cartridge			
	G1/2	10496	1
	G1	10497	
	G1/4, G3/8	539134	



Highlights



Pressure gauges

MA

- + Display ranges –1 ... 1.6 MPa
 - + Scales with bar, psi, MPa, also in combination
 - + Nominal sizes 15, 23, 27, 40, 50, 63
- **392, 393, 396, 397, 402, 404**



Festo pressure gauges for every application:

Whether they're being used for compressed air or vacuum. Measured in bar, psi or MPa. On a service unit component or flanged in a control cabinet. The broad range of pressure gauges offers the right solution for every application.

- + Easy to install
- + Scales with bar, psi, MPa
- + Fast pressure monitoring thanks to the red/green pressure gauge

Pressure gauge selection aid _____ **382**

Additional information:

→ www.festo.com/pressure-gauges



	Type, description
Nominal size 15	
	MA-15-...-QS, pressure gauge QS push-in connector Single scale
	MA-15-...-M5, pressure gauge Male thread Single scale
Nominal size 23	
	MA-23...-R1/8, pressure gauge Male thread Double scale
Nominal size 26	
	PAGN-26-...-G18S, pressure gauge Male thread Single scale
	PAGN-26-...-G18S, pressure gauge Male thread Triple scale
	PAGN-26-...-P10-RG, pressure gauge Cartridge 10 mm Double scale with red/green range
	PAGN-26-...-G18S, pressure gauge Cartridge 10 mm Single scale
	PAGN-26-...-P10, pressure gauge Cartridge 10 mm Double scale

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<u>Display range psi (outer scale), bar (inner scale)</u>	→ 395

	Type, description
Nominal size 27	
	MA-27-...-R1/8, pressure gauge Male thread Double scale
	MA-27-...-M5, pressure gauge Male thread Single scale
Nominal size 40	
	MA-40-...-RG, pressure gauge to EN 837-1 Male thread Single scale with red/green range
	MA-40-...-EN, pressure gauge to EN 837-1 Male thread Double scale
	MA-40-...-MPA, pressure gauge to EN 837-1 Male thread Single scale
	MA-40-...-1/8, pressure gauge to EN 837-1 Male thread Double scale
	PAGN-40-...-P10, pressure gauge to EN 837-1 Cartridge 10 mm Single scale
	PAGN-40-...-P10, pressure gauge to EN 837-1 Cartridge 10 mm Double scale
	PAGN-40-...-P10, pressure gauge to EN 837-1 Cartridge 10 mm Double scale

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	Type, description
Nominal size 40	
	PAGN-40-...-CPA, pressure gauge to EN 837-1 Male thread, single scale Certification for measuring devices in China
	FMA-40-...-EN, flanged pressure gauge to EN 837-1 Front panel mounting, male thread Double scale
	PAGN-P-40-...-CPA, flanged pressure gauge to EN 837-1 Front panel mounting, male thread Single scale Certification for measuring devices in China
	PAGN-40-...-R18, precision pressure gauge Male thread Double scale
	PAGN-40-...-R18, precision pressure gauge to EN 837-1 Male thread Double scale
	MAP-40-...-EN, precision pressure gauge to EN 837-1 Male thread Double scale
	VAM-40-...-RG, vacuum gauge Male thread Single scale with red/green range
	VAM-40-...-EN, vacuum gauge to EN 837-1 Male thread Double scale
	FVAM-40-...-EN, vacuum gauge to EN 837-1 Front panel mounting, male thread Double scale

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	Type, description
Nominal size 50	
	MA-50-...-RG, pressure gauge to EN 837-1 Male thread Single scale with red/green range
	MA-50-...-MPA, pressure gauge to EN 837-1 Male thread Single scale
	MA-50-...-EN, pressure gauge to EN 837-1 Male thread Double scale
	MA-50-...-1/4, pressure gauge to EN 837-1 Male thread Double scale
	FMA-50-...-EN, flanged pressure gauge to EN 837-1 Front panel mounting, male thread Double scale
	PAGN-P-50-...-CPA, flanged pressure gauge to EN 837-1 Front panel mounting, male thread Single scale Certification for measuring devices in China
Nominal size 63	
	MA-63-...-EN, pressure gauge to EN 837-1 Male thread Double scale
	PAGL-63-...-G14, pressure gauge for high-pressure applications Male thread Triple scale
	PAGN-63-...-V2, pressure gauge to EN 837-1 Male thread Single scale

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<u>Display range bar (outer scale), MPa/psi (inner scale)</u>	→ 404
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	Type, description
Nominal size 63	
	MA-63, pressure gauge to EN 837-1 Male thread Double scale
	FMA-63-...-EN, flanged pressure gauge to EN 837-1 Front panel mounting, male thread Double scale
	FMA-63-...-C, flanged pressure gauge to EN 837-1 Front panel mounting, male thread Double scale
	PAGN-P-63-...-CPA, flanged pressure gauge to EN 837-3 Front panel mounting, male thread Single scale Certification for measuring devices in China
	FMAP-63-...-EN, flanged precision pressure gauge to DIN EN 837-1 Front panel mounting, male thread Double scale
	VAM-63-...-RG, vacuum gauge to EN 837-1 Male thread Single scale with red/green range
	VAM-63-...-EN, vacuum gauge to EN 837-1 Male thread Double scale
	VAM-63-...-EN, vacuum gauge to EN 837-1 Male thread Triple scale
	FVAM-63-...-EN, vacuum gauge to EN 837-1 Front panel mounting, male thread Double scale

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Pressure gauges

	Display range [bar]	Display range [psi]	D1	TNR	PE
MA-15-...-QS Single scale QS push-in connector					
	0 - 10	—	QS-4	153383	1
			QS-6	153384	
			QS-8	153385	
MA-15-...-M5 Single scale Male thread Suitable for service unit components of series D					
	0 - 10	—	M5	132340	1
	—	0 - 145		132341	

Pressure gauges

	Display range [bar]	Display range [psi]	D1	TNR	PE
MA-23-...-R1/8 Double scale: bar (outer), psi (inner) Male thread Suitable for service unit components of series D					
	0 - 6	1 - 87	R1/8	183896	1
	0 - 10	0 - 145		183897	
	0 - 16	0 - 232		183898	

Pressure gauges

	Display range [MPa]	Display range [bar]	Display range [psi]	D1	TNR	PE
PAGN-26-...-G18S Single scale Male thread						
	–	0 - 10	–	G1/8 with sealing ring	8088985	1
PAGN-26-...-G18S Triple scale: bar (outer), MPa/psi (inner) Male thread						
	0 - 1	0 - 10	0 - 145	G1/8 with sealing ring	8088986	1
PAGN-26-...-P10-RG Double scale with red-green range: bar (outer), MPa (inner) Cartridge 10 mm						
	0 - 1	0 - 10	–	Cart- ridge 10 mm	8090378	1
PAGN-26-...-P10 Single scale Cartridge 10 mm						
	0 - 1.6	–	–	Cart- ridge 10 mm	563735	1
	0 - 1				563736	
PAGN-26-...-P10 Double scale: bar (outer), psi (inner) Cartridge 10 mm						
	–	0 - 16	0 - 232	Cart- ridge 10 mm	543487	1
		0 - 10	0 - 145		543488	

Pressure gauges

	Display range [MPa]	Display range [bar]	Display range [psi]	D1	TNR	PE
PAGN-26-...-P10 Double scale psi (outer), bar (inner) Cartridge 10 mm						
	–	0 - 16	0 - 232	Cart- ridge 10 mm	563731	1
		0 - 10	0 - 145		563732	

Pressure gauges

	Display range [MPa]	Display range [bar]	Display range [psi]	D1	TNR	PE
MA-27-...-R1/8 Double scale: bar (outer), psi (inner) Male thread Suitable for service unit components of series D						
	–	0 - 16	0 - 232	R1/8	541733	1
		0 - 25	0 - 362.5		541734	
MA-27-...-M5 Single scale Male thread Suitable for service unit components of series D						
	0 - 1	–	–	M5	526324	1
	–		0 - 160		527405	

Pressure gauges

	Display range [MPa]	Display range [bar]	Display range [psi]	D1	TNR	PE
MA-40-...-RG Single scale with red/green range Male thread Suitable for service unit components of the series MS According to EN 837-1						
	—	0 - 10	—	R1/8	525725	1
		0 - 16			525726	
	0 - 1	—			526778	
	0 - 1.6		526779			
	—		0 - 145		526786	
			0 - 232		526787	
		0 - 2.5	—		546963	
MA-40-...-EN Double scale: bar (outer), psi (inner) Male thread Suitable for service unit components of the series MS According to EN 837-1						
	—	0 - 10	0 - 145	R1/8	162835	1
		0 - 16	0 - 232		529046	
				R1/4	187080	
		0 - 6	1 - 87		187078	
		0 - 10	0 - 145		187079	
		0 - 25	0 - 362.5	G1/8	526167	
		0 - 6	1 - 87	G1/4	183899	
		0 - 16	0 - 232		183901	
		0 - 25	0 - 362.5		183902	
		0 - 10	0 - 145		183900	
MA-40-...-MPA Single scale Male thread Suitable for service unit components of series D According to EN 837-1						
	0 - 1	—	—	G1/8	192732	1
	0 - 1.6				192733	

Pressure gauges

	Display range [MPa]	Display range [bar]	Display range [psi]	D1	TNR	PE
MA-40-...-1/8 Double scale: bar (outer), psi (inner) Male thread Suitable for service unit components of series D According to EN 837-1						
	—	0 - 16	0 - 232	G1/8	345395	1
		0 - 10	0 - 145		359874	
PAGN-40-...-P10 Single scale Cartridge 10 mm According to EN 837-1						
	0 - 1.6	—	—	Cart- ridge 10 mm	563737	1
	0 - 1				563738	
PAGN-40-...-P10 Double scale: bar (outer), psi (inner) Cartridge 10 mm According to EN 837-1						
	—	0 - 10	0 - 145	Cart- ridge 10 mm	548009	1
		0 - 16	0 - 232		548010	
PAGN-40-...-P10 Double scale psi (outer), bar (inner) Cartridge 10 mm According to EN 837-1						
	—	0 - 10	0 - 145	Cart- ridge 10 mm	563734	1
		0 - 16	0 - 232		563733	

Pressure gauges

	Display range [MPa]	Display range [bar]	Display range [psi]	D1	TNR	PE
PAGN-40-...-CPA Single scale, MPa (outer) Male thread Certification for measuring devices in China According to EN 837-1						
	0 - 0.4	—	—	R1/8	8178623	1
	0 - 1				8178622	
	0 - 1.6				8178625	
	0 - 0.6				8178624	
	0 - 0.1				8178621	

Flanged pressure gauge

	Display range [bar]	Display range [psi]	D1	TNR	PE
FMA-40-...-EN Double scale: bar (outer), psi (inner) Front panel mounting, male thread According to EN 837-1					
	0 - 16	0 - 232	G1/4	159597	1
	0 - 10	0 - 145		159596	
PAGN-P-40-...-CPA Single scale, MPa (outer) Male thread Certification for measuring devices in China According to EN 837-1					
	0 ... 16	—	G1/4	8178627	1
	0 ... 1			8178626	

Precision pressure gauge

	Display range [MPa]	Display range [bar]	Display range [psi]	D1	TNR	PE
PAGN-40-...-R18 Double scale MPa (outer), bar (inner) Male thread						
	0 - 1	0 - 10	–	R1/8	2849916	1
PAGN-40-...-R18 Double scale: bar (outer), psi (inner) Male thread Suitable for precision pressure regulator LRP According to EN 837-1						
	–	0 - 10	0 - 145	R1/8	2849914	1
MAP-40-...-EN Double scale: bar (outer), psi (inner) Male thread According to EN 837-1						
	–	0 - 1	0 - 14.5	R1/8	161126	1
		0 - 6	1 - 87		161127	
		0 - 16	0 - 232		161128	
		0 - 4	1 - 58		162842	

Vacuum gauge

	Display range [bar]	Display range [inHg]	D1	TNR	PE
VAM-40-...-RG Single scale with red/green range Male thread R1/8 According to EN 837-1					
	-1 - 0	–	R1/8	547842	1

Vacuum gauge

	Display range [bar]	Display range [inHg]	D1	TNR	PE
VAM-40-...-EN Double scale: bar (outside), inHg (inside) Male thread R1/8 to EN 837-1					
	-1 - 0	-30 - 0	R1/8	537810	1
FVAM-40-...-EN Double scale: bar (outside), inHg (inside) Front panel mounting, male thread G1/8 to EN 837-1					
	-1 - 0	-30 - 0	G1/8	537812	1

Pressure gauges

	Display range [MPa]	Display range [bar]	Display range [psi]	D1	TNR	PE	
MA-50-...-RG Single scale with red/green range Male thread Suitable for service unit components of the series MS According to EN 837-1							
	0 - 1.6	—	—	R1/4	526782	1	
	—	0 - 10			525728		
	—	0 - 2.5			525727		
	0 - 0.25	—			526780		
	—	0 - 16			525729		
	—	—			0 - 36		526788
	0 - 1	—			—		526781
	—	—			0 - 145		526789
			0 - 232		526790		
MA-50-...-MPA Single scale Male thread Suitable for service unit components of series D According to EN 837-1							
	0 - 1	—	—	G1/4	192734	1	
	0 - 1.6				192735		
MA-50-...-EN Double scale: bar (outer), psi (inner) Male thread Suitable for service unit components of the series MS According to EN 837-1							
	—	0 - 10	0 - 145	G1/4	162838	1	
		0 - 16	0 - 232		162839		
		0 - 2.5	0 - 36.25		162837		
MA-50-...-1/4 Double scale: bar (outer), psi (inner) Male thread Suitable for service unit components of series D According to EN 837-1							
	—	0 - 16	0 - 232	G1/4	356759	1	
		0 - 10	0 - 145		359873		

Flanged pressure gauge

	Display range [bar]	Display range [psi]	D1	TNR	PE
FMA-50-...-EN Double scale: bar (outer), psi (inner) Front panel mounting, male thread According to EN 837-1					
	0 - 2.5	0 - 36.25	G1/4	159598	1
	0 - 16	0 - 232		159600	
	0 - 10	0 - 145		159599	
PAGN-P-50-...-CPA Single scale, MPa (outer) Male thread Certification for measuring devices in China According to EN 837-1					
	0 ... 1	—	G1/4	8178628	1
	0 ... 16	—		8178629	

Pressure gauges

	Display range [MPa]	Display range [bar]	Display range [psi]	D1	TNR	PE
MA-63-...-EN Double scale: bar (outer), psi (inner) Male thread Suitable for service unit components of the series MS According to EN 837-1						
	—	0 - 1	0 - 14.5	G1/4	162844	1
PAGL-63-...-G14 Triple scale: bar (outside), MPa/psi (inside) Male thread for high-pressure applications to EN 837-1						
	0 - 6	0 - 60	0 - 870	G1/4	1166938	1
					1908519	
PAGN-63-...-V2 Single scale Male thread According to EN 837-1						
	—	0 - 16	—	G1/4	8081401	1
MA-63 Double scale: bar (outer), psi (inner) Male thread According to EN 837-1						
	—	0 - 0.25	0 - 3.6	G1/4	7169	1

Flanged pressure gauge

	Display range [bar]	Display range [psi]	D1	TNR	PE
FMA-63-...-EN Double scale: bar (outer), psi (inner) Front panel mounting, male thread According to EN 837-1					
	0 - 2.5	0 - 36.25	G1/4	159601	1
	0 - 10	0 - 145		159602	
	0 - 16	0 - 232		159603	
FMA-63-...-C Double scale: bar (outer scale), psi (inner scale) Front panel mounting, male thread To EN 837-1					
	0 - 0.25	0 - 3.6	G1/4	225783	1
PAGN-P-63-...-CPA Single scale, MPa (outer) Male thread Certification for measuring devices in China According to EN 837-3					
	0 ... 0.4	-	G1/4	8178633	1
	0 ... 0.6			8178634	
	0 ... 1.6			8178635	
	0 ... 1			8178630	
	0 ... 0.1			8178632	
	0 ... 1.6			8178631	

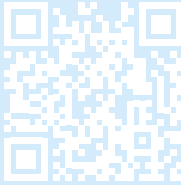
Flanged precision pressure gauge

	Display range [bar]	Display range [psi]	D1	TNR	PE
FMAP-63-...-EN Double scale: bar (outer scale), psi (inner scale) Front panel mounting, male thread To EN 837-1					
	0 - 6	1 - 87	G1/4	161130	1
	0 - 16	0 - 232		161131	
	0 - 1	0 - 14.5		161129	
	0 - 4	1 - 58		162843	

Vacuum gauge

	Display range [bar]	Display range [psi]	Display range [inHg]	D1	TNR	PE
VAM-63-...-RG Single scale with red/green range Male thread R1/4 According to EN 837-1						
	-1 - 0	–	–	R1/4	547843	1
VAM-63-...-EN Double scale: bar (outside), inHg (inside) Male thread R1/4 to EN 837-1						
	-1 - 0	–	-30 - 0	R1/4	537811	1
VAM-63-...-EN Triple scale: bar (outside), inHg/psi (inside) Male thread R1/4 to EN 837-1						
	-1 - 9	0 - 130	-30 - 0	R1/4	537814	1
FVAM-63-...-EN Double scale: bar (outer), inHg (inner) Front panel mounting, male thread G1/4 According to EN 837-1						
	-1 - 0	–	-30 - 0	G1/4	537813	1

→ www.festo.com/support







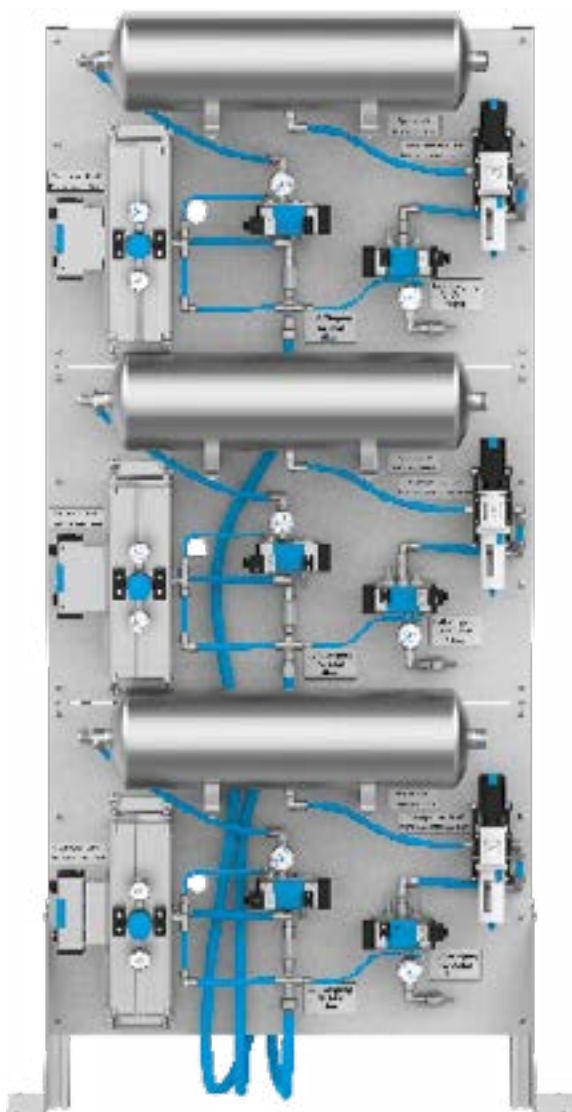
Silencers

AMTE

+ Sintered metal, short and long design

→ 417





Accessories – you don't need a magnifying glass to find them

You only really notice accessories when you need them and can't find them;

then it's like searching for a needle in the proverbial haystack. Not with Festo! Our comprehensive range of accessories including sealing rings, tubing cutters or silencers is carefully thought out to ensure you have everything you need for a speedy installation.

Look for our products from the Core Range ★

+	Inscription systems	
	Inscription labels	412
+	Compressed air guns	
	Air blow guns	413
	Air blow gun nozzles	413
+	Air reservoirs	
	Compressed air reservoirs	414
+	Pneumatic indicators	
	Pressure indicator	415
	Pressure indicator plate	415
+	Silencers ★	
	Silencers	416

Inscription label

	Size	Labelling	TNR	PE
BZ – Anodised aluminium according to DIN 1471, character height 6 mm				
	ø 22.3 mm	–	4588	1
		ON	4589	
		OFF	4590	
		START	7814	
	ø 30.5 mm	–	7821	10
		ON	9811	
		OFF	9812	
			9813	
BZ-6 – Rigid PVC, yellow according to DIN 1471, character height 10 mm				
	ø 90 mm	EMERGENCY	6527	1
		OFF	9815	10

Inscription label

	Size	Pack size	TNR	PE
KM – for attachment for cable				
	20x5.2 mm	1	33361	10
IBS/KMC/MH – to be pushed in in a carrier				
	20x9 mm	–	18182	1
	10x6 mm		18576	
	–		33362	
	17x9 mm	24	161937	
	–	–	197259	
	20x8 mm	20	539388	
ASLR – to be pushed in into a carrier				
	23x4 mm	30	541598	1
	15x6 mm	40	565306	
	12.5x6 mm	24	8003303	
	6 x 12.5 mm		8087174	10
	8x5 mm	–	574590	1000

Air guns

	Connection	TNR	PE
LSP-1/4-D – aluminium			
	G1/4	35528	1
LSP-1/4-C – polyamide, reinforced			
	G1/4	184318	1
LPZ-SD – air gun nozzle with protective air shield Aluminium			
	M12x1.25	184321	1
LPZ-LD – air gun nozzle with noise reduction Chrome-plated die-cast zinc, aluminium			
	M12x1.25	184322	1
LPZ-RG – air gun nozzle with straight pipe Brass, nickel-plated			
	M12x1.25	565317	1
LPZ-RB – air gun nozzle with elbow pipe Brass, nickel-plated			
	M12x1.25	565316	1

Air reservoir

	Volume [l]	D1	Condensate drain	TNR	PE
CRVZS – High-alloy stainless steel conforms to AD 2000, without condensate drain, mounting with fixing clips					
	0.1 l	G1/8	–	160233	1
	0.4 l	G1/4		160234	
	0.75 l			160235	
	2 l	G1/2		160236	
CRVZS – High-alloy stainless steel corresponds to AD 2000, with condensate drain, mounting with through-holes					
	10 l	G1	G3/8	160237	1
	5 l			192159	
	20 l			534845	
VZS – Powder-coated steel conforms to EN 286-1, with condensate drain, mounting with through-hole					
	20 l	G1	G3/8	192161	1

Visual indicators

	D1	TNR	PE
OH-8 – Pressure indicator Mounting Ø 8.2 mm, response pressure > 0.12 MPa, sight cap with coloured sleeve			
	Barbed fitting PK-3, Indicator colour blue	10090	1
	Barbed fitting PK-3, Indicator colour yellow	10091	
	Barbed fitting PK-3, Indicator colour red	10088	
	Barbed fitting PK-3, Indicator colour green	10089	
OH-10 – Pressure indicator Mounting Ø 10.5 mm, response pressure > 0.14 MPa, pressure indicator pin			
	Barbed fitting PK-3	9791	1
OH-22 – Pressure indicator Mounting Ø 22.5 mm, response pressure > 0.15 MPa, sight cap with coloured sleeve			
	G1/8, Indicator colour red	4131	1
	G1/8, Indicator colour blue	4600	
	G1/8, Indicator colour yellow	4601	
	G1/8, Indicator colour green	4237	
OH-2N – Pressure indicator plate Response pressure > 0.1 MPa, with 16 pressure indicator pins			
	Barbed fitting PK-3	7878	1

Silencers

	D1	q [l/min]	LpA [dB(A)]	TNR	PE
U – sintered metal					
	PK-3	310	70	4646	10
	PK-4	580	77	4932	
U – polymer, male thread					
	G1/8	2000	74	★ 2307	1
				534222	50
	G1/4	3300	76	★ 2316	1
				534223	20
	G3/8	6000	82	★ 2309	12
				534224	20
	G1/2	10300		★ 2310	1
				534225	20
G3/4	17600	85	★ 2311	1	
G1	20800	90	★ 2312		
U-...-I – polymer, female thread					
	G1/8	2050	76.5	3670	1
U-...-B – die-cast metal					
	G1/8	1340	74	6841	1
	G1/4	2440	80	6842	
	G3/8	5800		6843	
	G1/2	7500	81	6844	
	G3/4	10000	83	6845	
	G1	17500	85	151990	
U-...-B, NPT – die-cast metal					
	3/4 NPT	11834	81	566823	1
UC-QS – with push-in sleeve					
For push-in fitting QS					
	QS-3	170	60	165005	1
	QS-4	350		165006	
	QS-6	800		165007	
	QS-8	1500		175611	
	QS-10	3100	68	526475	

Silencers

	D1	q [l/min]	LpA [dB(A)]	TNR	PE
UC – for solenoid valves CPE					
	M5	350	60	★ 165003	1
				534217	50
	M7	800	58	★ 161418	1
				534218	50
	G1/8	1700	59	★ 161419	1
				534219	50
	G1/4	3200	60	★ 165004	1
				534220	20
G3/8	5000		1707427	1	
			576759	20	
AMTC – for solenoid valves VUVB-ST12/valve terminal VTUB-12					
	Cartridge 10 mm	–	58	1224460	1
AMTE-M-H – metal, short design					
	M5	91	71	★ 1206621	20
	G1/8	615	92	★ 1206622	
	G1/4	1000	95	★ 1206623	
	G3/8	1545	92	★ 1206624	10
	G1/2	2745		★ 1206625	
AMTE-M-LH – metal, long design					
	M3	95	55	1231120	20
	M5	255	72	★ 1205858	
	G1/8	1735	76	★ 1205860	
	G1/4	3140	83	★ 1205861	
	G3/8	5430	82	★ 1205862	10
	G1/2	10500	88	★ 1205863	
	G3/4	12400	85	1205864	
	G1	17235	88	1205865	
AMTE-M-LH – metal, long design					
	1/2 NPT	9240	85	1206992	10
	3/8 NPT	5365	83	1206991	
	10-32 UNF-2A	260	71	1206994	20
	1/8 NPT	1615	77	1206989	
	1/4 NPT	3080	82	1206990	

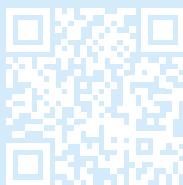
Silencers

	D1	q [l/min]	LpA [dB(A)]	TNR	PE
LFU – filter silencer					
	G1/4	4000	78	539132	1
	G3/8	4700		539133	
	G1/2	6000	–	10494	
	G1	12500		10495	

Silencers for special requirements

	D1	TNR	PE
UO – for vacuum generators VN-T2/T3			
	M5	8141085	5
	M7	197582	1
	G1/8	197583	
	G1/4	197584	
UOM – for vacuum generators VN-T4/T6			
	G1/4	538432	1
	G3/8	538433	
UOMS – silencer extension			
For extending the silencer UOM for further noise reduction			
	G1/4	538436	1
	G3/8	538437	
KD3 – coupling socket			
Plug-in coupling, female thread			
	G1	552252	1
UOS-1 – For soft start/quick exhaust valve MS6-SV			
For low exhaust rate			
	G1	1901207	1

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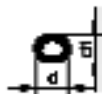
Measurement method

Flow-relevant bending radius R_d



The tube is bent in the direction of its own curve until 5% of the tube's outer diameter is flattened.

R_d is then calculated mathematically. The flow rate is not reduced until R_d is reached.

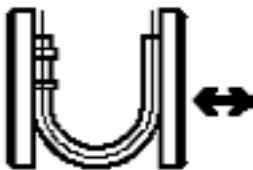


Cross-section flattened by bending the tube.

d = non-deformed tubing O.D.

d_1 = deformed tubing O.D.

Minimum bending radius R_{min}



The tubing fixed to the base plate is bent until the deformation results in a kink. The measured value is the minimum bending radius R_{min} .

This R_{min} results in significant reductions in the flow rate.

Determining the optimum tubing dimensions

Make sure you select the correct barbed tubing connector when installing an application. The available cross-section from the air preparation unit to the valve should be as wide as possible to maintain an optimum air supply. This ensures there is no loss of air. For the application, on the other hand, the tube cross-section from the valve to the drive should be kept as small as possible. This keeps the air consumption as low as possible. The appropriate tubing diameter depends on the amount of air required by the application.

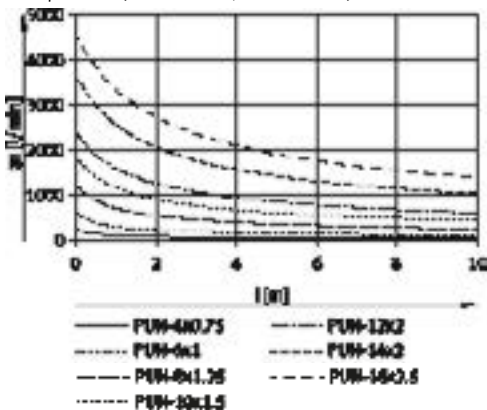
Install the shortest possible tubing to ensure that the

required volume is not lost along the tubing length. The diagram below uses a Festo tubing/fitting combination (QS and PUN) to illustrate how the volumetric flow rate decreases the longer the tube length. Push-in fittings from Festo do not restrict the nominal diameter of the barbed tubing connector.

Even the shape of the tube has an effect on the pressure drop. If a high flow rate is required, then straight tubes are the best choice. Spiral tubing is characterised by its compact design, although friction losses are increased due to the many coils.

Volumetric flow rate q_n as a function of tube length l

Example: PUN ($P_1 = 0.6 \text{ MPa}$, $P_2 = 0.5 \text{ MPa}$)



Electronic catalogue and design software

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your configuration. In addition, you can access all further product information, such as CAD files, accessories or documentation. Simply save your configuration as a favourite to be able to access frequently required components at any time, or just save the configuration in the shopping basket.

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Air consumption of cylinders

Calculate your system's air consumption quickly and conveniently. Simply enter all the drives and tubing, set the cycle times and working pressure and the air consumption per minute and per day will be calculated

for you. The input table including the result can be exported directly to Excel.

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