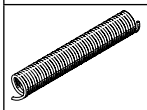
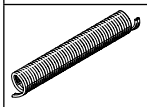
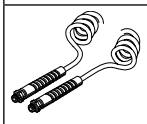
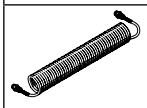
Spiral plastic tubing

FESTO

Product range overview

Design	Type	⌀ [mm]	Colour			Operating medium		
			Blue	Black	Blue/black	Compressed air	Vacuum	Water
Spiral tubing		**Outside ⌀**						
	**PUN-S** Polyurethane	4 6 8 10 12	■	■	–	■	■	–
	**PUN-S-DUO** Polyurethane Paired tubing	4 6 8 10 12	–	–	■	■	■	–
Spiral tubing, pre-assembled		**Inside ⌀**						
	**PUN-SG** Polyurethane	6.4 7.9	■	–	–	■	■	■
	**PPS** Polyamide	4.75 6.35	■	–	–	■	■	■

Note

The term 'water' used here should be understood to mean liquid mains water that is free of ice. The suitability of the products for water modified in any way, such as demineralised water, salt water or water with additives, as well as water in the vapour phase, must be enquired about separately.

The suitability of the products for water should not be understood as approval for e.g. drinking water applications.

Product range overview

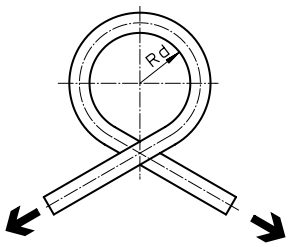
Type	Halogen-free	PWIS-free to FN 942 010	Suitable for energy chains	Approved by the German Technical Control Board (TÜV)	Resistance					Shore hardness[2]	→ Page/ Internet
					Chemicals	Microbes	UV radiation	Hydrolysis	Stress cracks		
Spiral tubing											
PUN-S	■	■	■	■	–	–	++[1]	+	++	D 52 ±3	6
PUN-S-DUO	■	■	■	■	–	–	+	+	+	D 52 ±3	8
Spiral tubing, pre-assembled											
PUN-SG	■	■	–	–	+	++	+	++	+	A 87 ±3	11
PPS	■	■	■	–	+	++	+	+	+	–	13

++ Very suitable
+ Limited suitability (on request)
- Not suitable
1) Applies to black colour
2) Values are determined using test boards. Derived values using tubing may vary.

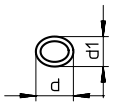
Technical data

Measurement method

Flow-relevant bending radius Rd

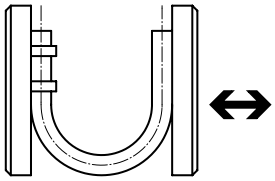


The tube is bent in the direction of its own curve until the tubing outer diameter is flattened by 5%.
Rd is then calculated mathematically.
The flow rate is not reduced until Rd is reached.



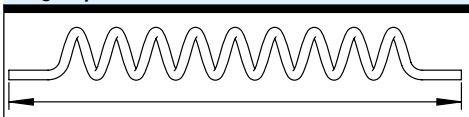
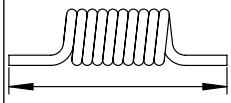
Cross section flattened by bending the tube.
d = non-deformed tubing O.D.
d1 = deformed tubing O.D.

Minimum bending radius Rmin



The tube fixed to the base plate is bent until the deformation results in a kink. The measured value is the minimum bending radius Rmin. This Rmin results in significant reductions in flow rate.

Length specifications

	Working length	With tensile load, 80% of the maximum section length
	Block length	Without tensile load

Note

The working length represents 80% of the maximum permissible expansion. This maximum expansion is the limit value before permanent deformation takes place.

Type codes – PUN-S, PUN-S-DUO

001	Series	
PUN	Plastic tubing, polyurethane	

002	Tubing O.D. x wall thickness	
4x0,75	4x0.75 mm	
6x1	6x1 mm	
8x1,25	8x1.25 mm	
10x1,5	10x1.5 mm	
12x2	12x2 mm	

003	Design	
S	Spiral	

004	Working length [m]	
0,5	0.5	
1	1	
1,5	1.5	
2	2	
6	6	

005	Number of tubes	
	Single tubing	
DUO	Paired tubing	

006	Colour	
SW	Black	
BL	Blue	
BS	Blue/black	

Data sheet – PUN-S

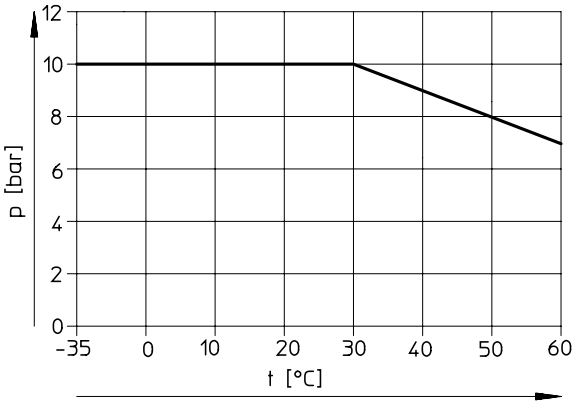
Spiral plastic tubing PUN-S

Highly flexible plastic tubing

General technical data						
Type	PUN-4x0.75-S	PUN-6x1-S	PUN-8x1.25-S	PUN-10x1.5-S	PUN-12x2-S
Pneumatic connection	For push-in connector O.D. 4 mm	For push-in connector O.D. 6 mm	For push-in connector O.D. 8 mm	For push-in connector O.D. 10 mm	For push-in connector O.D. 12 mm
	For barbed connector I.D. 3 mm with union nut	For barbed connector I.D. 4 mm with union nut	For barbed connector I.D. 6 mm with union nut	–	–
	For barbed connector I.D. 3 mm	For barbed connector I.D. 4 mm	For barbed connector I.D. 6 mm	–	–

Operating and environmental conditions		
Temperature-dependent operating pressure	[bar]	–0.95 ... +10 ➔ graph
Operating medium		Compressed air to ISO 8573-1:2010 [7:–:–]
Ambient temperature	[°C]	–35 ... +60
Certification		German Technical Control Board (TÜV)

Operating pressure p as a function of temperature t



Possible fittings

Push-in fitting QS, Quick Star[1)]
➔ Internet: qs

Push-in fitting QS-B, Quick Star[1)]
➔ Internet: qs-b

Push-in fitting CRQS, Quick Star, stainless steel
➔ Internet: crqs

Push-in fitting NPQM
➔ Internet: npqm

Quick connector CK
➔ Internet: ck

Barbed fitting CN
➔ Internet: cn

1) Recommended fitting

Note

Greater force is required when assembling the fittings CK/CN. Expanding the tube ends using a tapered mandrel makes pushing them on easier.

Data sheet – PUN-S

Materials	
Shore hardness	D 52 ±3
Tubing	TPE-U(PU)
Note on materials	RoHS-compliant
	Free of copper and PTFE

Dimensions and ordering data

Outside ⌀ [mm]	Inside ⌀ [mm]	Winding ⌀ [mm]	Number of windings	Working length [m]	Block length [m]	Weight [g]	Part no.	Type
Colour: blue								
4	2.6	25	20	0.5	0.184	13	**197587**	**PUN-4x0.75-S-0.5-BL**
			45	1	0.284	27	**197588**	**PUN-4x0.75-S-1-BL**
			70	1.5	0.384	42	**197589**	**PUN-4x0.75-S-1.5-BL**
6	4	46	23	1	0.344	51	**197590**	**PUN-6x1-S-1-BL**
			52	2	0.518	110	**197591**	**PUN-6x1-S-2-BL**
			168	6	1.214	350	**197592**	**PUN-6x1-S-6-BL**
8	5.7	60	12	1	0.304	65	**197593**	**PUN-8x1.25-S-1-BL**
			27	2	0.424	140	**197594**	**PUN-8x1.25-S-2-BL**
			87	6	0.904	440	**197595**	**PUN-8x1.25-S-6-BL**
10	7	80	9.5	1	0.305	110	**197596**	**PUN-10x1.5-S-1-BL**
			22	2	0.43	250	**197597**	**PUN-10x1.5-S-2-BL**
			70	6	0.91	760	**197598**	**PUN-10x1.5-S-6-BL**
12	8	95	9	1	0.32	200	**197599**	**PUN-12x2-S-1-BL**
			20	2	0.452	420	**197600**	**PUN-12x2-S-2-BL**
			64	6	0.98	1300	**197601**	**PUN-12x2-S-6-BL**
Colour: black								
4	2.6	25	20	0.5	0.184	13	**197602**	**PUN-4x0.75-S-0.5-SW**
			45	1	0.284	27	**197603**	**PUN-4x0.75-S-1-SW**
			70	1.5	0.384	42	**197604**	**PUN-4x0.75-S-1.5-SW**
6	4	46	23	1	0.344	51	**197605**	**PUN-6x1-S-1-SW**
			52	2	0.518	110	**197606**	**PUN-6x1-S-2-SW**
			168	6	1.214	350	**197607**	**PUN-6x1-S-6-SW**
8	5.7	60	12	1	0.304	65	**197608**	**PUN-8x1.25-S-1-SW**
			27	2	0.424	140	**197609**	**PUN-8x1.25-S-2-SW**
			87	6	0.904	440	**197610**	**PUN-8x1.25-S-6-SW**
10	7	80	9.5	1	0.305	110	**197611**	**PUN-10x1.5-S-1-SW**
			22	2	0.43	250	**197612**	**PUN-10x1.5-S-2-SW**
			70	6	0.91	760	**197613**	**PUN-10x1.5-S-6-SW**
12	8	95	9	1	0.32	200	**197614**	**PUN-12x2-S-1-SW**
			20	2	0.452	420	**197615**	**PUN-12x2-S-2-SW**
			64	6	0.98	1300	**197616**	**PUN-12x2-S-6-SW**

Data sheet – PUN-S-DUO

DUO spiral plastic tubing PUN-S-DUO

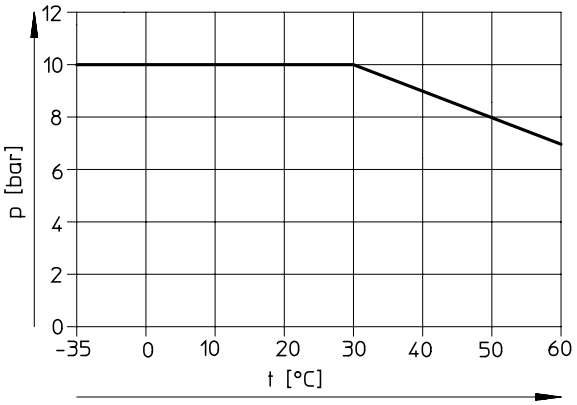
Highly flexible paired plastic tubing. Two lengths of tubing are fused together into a tubing pair.

For fitting, the paired tubing is separated as required at both ends.

General technical data						
Type	PUN-4x0.75-S	PUN-6x1-S	PUN-8x1.25-S	PUN-10x1.5-S	PUN-12x2-S
Pneumatic connection	For push-in connector O.D. 4 mm	For push-in connector O.D. 6 mm	For push-in connector O.D. 8 mm	For push-in connector O.D. 10 mm	For push-in connector O.D. 12 mm
	For barbed connector I.D. 3 mm with union nut	For barbed connector I.D. 4 mm with union nut	For barbed connector I.D. 6 mm with union nut	–	–
	For barbed connector I.D. 3 mm	For barbed connector I.D. 4 mm	For barbed connector I.D. 6 mm	–	–

Operating and environmental conditions		
Temperature-dependent operating pressure	[bar]	–0.95 ... +10 ➔ graph
Operating medium		Compressed air to ISO 8573-1:2010 [7:–:–]
Ambient temperature	[°C]	–35 ... +60
Certification		German Technical Control Board (TÜV)

Operating pressure p as a function of temperature t



Possible fittings

Push-in fitting QS, Quick Star[1)]
➔ Internet: qs

Push-in fitting QS-B, Quick Star[1)]
➔ Internet: qs-b

Push-in fitting CRQS, Quick Star, stainless steel
➔ Internet: crqs

Push-in fitting NPQM
➔ Internet: npqm

Quick connector CK
➔ Internet: ck

Barbed fitting CN
➔ Internet: cn

1) Recommended fitting

Note

Greater force is required when assembling the fittings CK/CN. Expanding the tube ends using a tapered mandrel makes pushing them on easier.

Data sheet – PUN-S-DUO

Materials	
Shore hardness	D 52 ±3
Tubing	TPE-U(PU)
Note on materials	RoHS-compliant
	Free of copper and PTFE

Dimensions and ordering data

Outside ø [mm]	Inside ø [mm]	Winding ø [mm]	Number of windings	Working length [m]	Block length [m]	Weight [g]	Part no.	Type
Colour: blue/black								
4	2.6	25	20	0.5	0.268	25	**197617**	**PUN-4x0.75-S-0.5-DUO-BS**
			45	1	0.468	55	**197618**	**PUN-4x0.75-S-1-DUO-BS**
			70	1.5	0.668	84	**197619**	**PUN-4x0.75-S-1.5-DUO-BS**
6	4	46	23	1	0.488	102	**197620**	**PUN-6x1-S-1-DUO-BS**
			52	2	0.836	230	**197621**	**PUN-6x1-S-2-DUO-BS**
			168	6	2.228	700	**197622**	**PUN-6x1-S-6-DUO-BS**
8	5.7	60	12	1	0.408	130	**197623**	**PUN-8x1.25-S-1-DUO-BS**
			27	2	0.648	280	**197624**	**PUN-8x1.25-S-2-DUO-BS**
			87	6	1.608	870	**197625**	**PUN-8x1.25-S-6-DUO-BS**
10	7	80	9.5	1	0.41	220	**197626**	**PUN-10x1.5-S-1-DUO-BS**
			22	2	0.66	490	**197627**	**PUN-10x1.5-S-2-DUO-BS**
			70	6	1.62	1520	**197628**	**PUN-10x1.5-S-6-DUO-BS**
12	8	95	9	1	0.44	390	**197629**	**PUN-12x2-S-1-DUO-BS**
			20	2	0.704	830	**197630**	**PUN-12x2-S-2-DUO-BS**
			64	6	1.76	2600	**197631**	**PUN-12x2-S-6-DUO-BS**

Type codes – PUN-SG, pre-assembled

001	Series	
PUN	Plastic tubing, polyurethane	

002	Tubing O.D. x wall thickness	
10x1,5	10x1.5 mm	
12x2	12x2 mm	

003	Design	
SG	Spiral with fabric	

004	Working length [m]	
2,4	2.4	
4,8	4.8	
6	6	

005	Colour	
BL	Blue	

006	Pneumatic connection	
1/4	Male thread G1/4	
3/8	Male thread G3/8	

Data sheet – PUN-SG, pre-assembled

Spiral plastic tubing PUN-SG

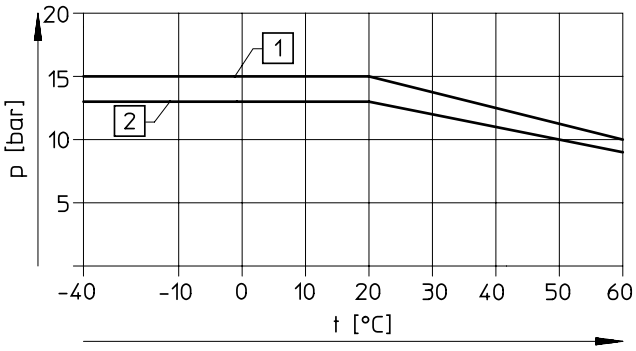
Highly flexible and hydrolysis-resistant pneumatic tubing with fibre reinforcement and captive rotatable fittings.

General technical data			
Type		PUN-10x1.5-SG	PUN-12x2-SG
Pneumatic connection 1, 2		Male thread G1/4	Male thread G3/8
Nominal tightening torque	[Nm]	11 ±20%	12.5 ±20%

Operating and environmental conditions			
Type		PUN-10x1.5-SG	PUN-12x2-SG
Temperature-dependent operating pressure	[bar]	–0.95 ... +15 ➔ graph	–0.95 ... +13 ➔ graph
Operating medium		Compressed air to ISO 8573-1:2010 [7:–:–]	
Ambient temperature	[°C]	–40 ... +60	
Corrosion resistance class CRC[1)]		1	

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Operating pressure p as a function of temperature t



[1] PUN-10x1.5-SG
[2] PUN-12x2-SG

Materials	
Shore hardness	A 87 ±3
Tubing	TPE-U(PU)
Connecting thread	Nickel-plated brass
Protection against kinking	POM
Note on materials	RoHS-compliant
	Free of copper and PTFE

Dimensions and ordering data

Outside ø [mm]	Inside ø [mm]	Flow-relevant bending radius [mm]	Winding ø [mm]	Number of windings	Working length [m]	Block length [m]	Weight [g]	Part no.	Type
Colour: blue									
9.5	6.4	50	42	21	2.4	0.889	180	**533463**	**PUN-10x1.5-SG-2.4-BL-1/4**
				50	4.8	1.165	340	**533464**	**PUN-10x1.5-SG-4.8-BL-1/4**
				66	6	1.317	430	**533465**	**PUN-10x1.5-SG-6-BL-1/4**
11.7	7.9	65	51	41	4.8	1.172	480	**533466**	**PUN-12x2-SG-4.8-BL-3/8**
				53	6	1.312	560	**533467**	**PUN-12x2-SG-6-BL-3/8**

Type codes – PPS, pre-assembled

001	Series	
PPS	Spiral plastic tubing, polyamide	

002	Pipe/tubing I.D. [mm]	
4	4.7	
6	6.2	

003	Working length [m]	
7,5	7.5	
15	15	

004	Pneumatic connection	
1/4	Male thread G1/4	

005	Colour	
BL	Blue	

Data sheet – PPS, pre-assembled

Spiral plastic tubing PPS

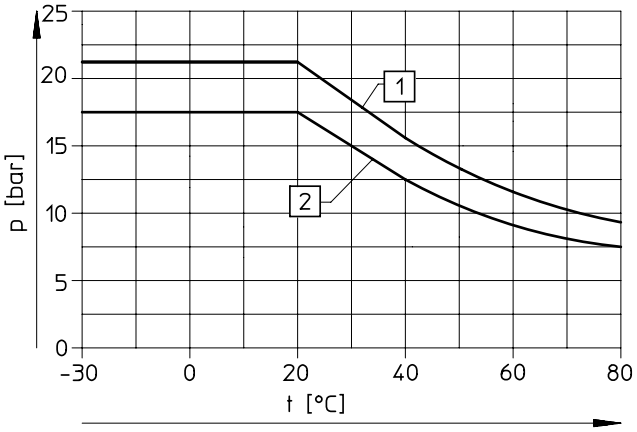
This hydrolysis-resistant plastic tubing has high thermal and mechanical load capacities. Each tubing length is delivered ready for installation with 2 rotatable connectors and captive sealing rings OL. Kinks at the tubing ends are prevented by the anti-kinking springs.

General technical data		
Pneumatic connection 1, 2		Male thread G1/4
Nominal tightening torque	[Nm]	11 ±20%

Operating and environmental conditions			
Type		PPS-4	PPS-6
Temperature-dependent operating pressure	[bar]	–0.95 ... +21.2 ➔ graph	–0.95 ... +17.2 ➔ graph
Operating medium		Compressed air to ISO 8573-1:2010 [7:–:–]	
Ambient temperature	[°C]	–30 ... +80	
Corrosion resistance class CRC[1)]		1	

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Operating pressure p as a function of temperature t

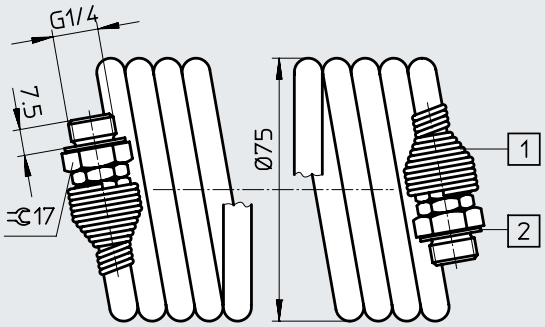


[1] PPS-4
[2] PPS-6

Materials	
Tubing	PA12-P
Connecting thread	Brass
Protection against kinking	Galvanised steel
Note on materials	RoHS-compliant

Data sheet – PPS, pre-assembled

Dimensions Download CAD data ➔ www.festo.com



[1] Anti-kinking spring
[2] Captive seal

Ordering data

Outside ø [mm]	Inside ø [mm]	Winding ø [mm]	Number of windings	Working length [m]	Block length [m]	Weight [g]	Part no.	Type
Colour: blue								
6.3	4.7	75	44	7.5	0.34	249	**19798**	**PPS-4-7.5-1/4-BL**
			90	15	0.67	367	**19799**	**PPS-4-15-1/4-BL**
7.8	6.2	75	43	7.5	0.43	298	**19796**	**PPS-6-7.5-1/4-BL**
			86	15	0.80	500	**19797**	**PPS-6-15-1/4-BL**