





## Spiral plastic tubing

**FESTO**



# Spiral plastic tubing

Product range overview

Version	Type	Ø [mm]	Colour			Operating medium		
			Blue	Black	Blue/black	Compressed air	Vacuum	Water (not drinking water)
<b>Spiral tubing</b>		<b>O.D.</b>						
	<b>PUN-S</b> Polyurethane	4, 6, 8, 10, 12	■	■	-	■	■	-
	<b>PUN-S-DUO</b> Polyurethane Paired tubing	4, 6, 8, 10, 12	-	-	■	■	■	-
<b>Spiral tubing, pre-assembled</b>		<b>I.D.</b>						
	<b>PUN-SG</b> Polyurethane	6.4; 7.9	■	-	-	■	■	■
	<b>PPS</b> Polyamide	4.75; 6.35	■	-	-	■	■	■

# Spiral plastic tubing

Product range overview

Type	Halogen-free	PWS-free to FN 942 010	Suitable for use with energy chains	Approved by the German Technical Control Board (TÜV)	Resistance					Shore hardness <sup>2)</sup>	→ Page/ Internet
					Chemicals	Microbes	UV radiation	Hydrolysis	Stress cracks		
<b>Spiral tubing</b>											
PUN-S	■	■	■	■	-	-	++ <sup>1)</sup>	+	++	D 52 ±3	6
PUN-S-DUO	■	■	■	■	-	-	+	+	+	D 52 ±3	8
<b>Spiral tubing, pre-assembled</b>											
PUN-SG	■	■	-	-	+	++	+	++	+	A 87 ±3	10
PPS	■	■	■	-	+	++	+	+	+	-	11

++ Highly suitable

+ Limited suitability (on request)

- Not suitable

1) Applies to black colour

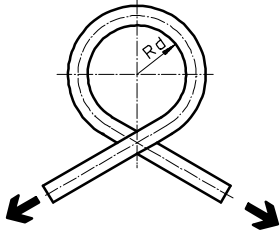
2) Values are determined using test boards. Values determined using tubing may vary.

# Spiral plastic tubing

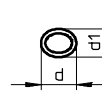
Technical data

## Method of measurement

### Flow-relevant bending radius $R_d$



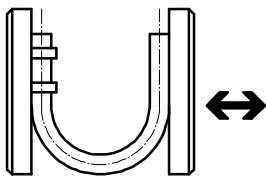
The tube is bent in the direction of its own curve until the tubing outer diameter is flattened by 5%.  $R_d$  is then calculated mathematically. The flow rate is not reduced until  $R_d$  is reached.



Cross section flattened by bending the tube.

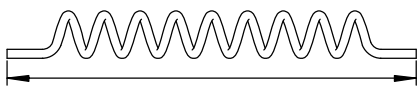
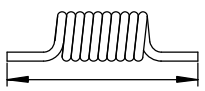
$d$  = non-deformed tubing O.D.  
 $d_1$  = deformed tubing O.D.

### Minimum bending radius $R_{min}$



The tube 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 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.

# Spiral plastic tubing

Type codes

## Type codes spiral plastic tubing PUN

PUN	-	6x1	-	S	-	1	-	DUO	-	BS	-	
-----	---	-----	---	---	---	---	---	-----	---	----	---	--

Material	
PUN	Polyurethane

O.D. x wall thickness [mm]	

Design	
S	Spiral
SG	Spiral with fabric

Working length [m]	

Number of tubes	
	Single tube
DUO	Paired tubing (only for S)

Colour	
SW	Black (only for S)
BL	Blue
BS	Blue/black (only for DUO)

Pneumatic connection (only for SG)	
1/4	Male thread G1/4
3/8	Male thread G3/8

## Type codes spiral plastic tubing PPS

PPS	-	4	-	15	-	1/4	-	BL
-----	---	---	---	----	---	-----	---	----

Material	
PPS	Polyamide

I.D. [mm]	
4	I.D. 4.7 mm
6	I.D. 6.2 mm

Working length [m]	
7.5	Working length 7.5 m
15	Working length 15 m

Pneumatic connection	
1/4	Male thread G1/4

Colour	
BL	Blue

# Spiral plastic tubing PUN-S

Technical data

## Spiral plastic tubing PUN-S

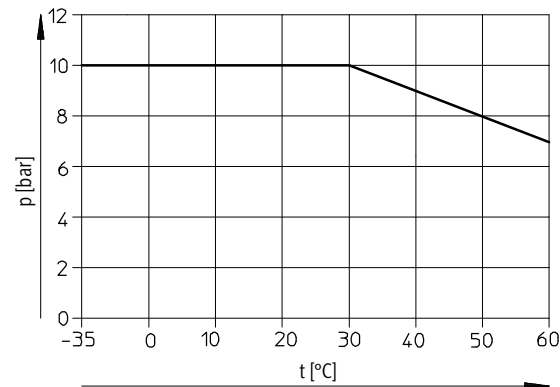
Highly flexible plastic tubing.




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
Approval	German Technical Control Board (TÜV)


### Operating pressure p as a function of temperature t





### Possible fittings


- 

Push-in fitting QS, Quick Star<sup>1)</sup>  
→ Internet: qs
- 

Push-in fitting QS-B, Quick Star<sup>1)</sup>  
→ 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.

# Spiral plastic tubing PUN-S

Technical data



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

Dimensions and ordering data									
O.D.	I.D.	Winding Ø	Number of windings	Working length	Block length	Weight	Colour	Part No.	Type
[mm]	[mm]	[mm]		[m]	[m]	[g]			
4	2.6	25	20	0.5	0.184	13	Blue	197587	PUN-4x0,75-S-0,5-BL
							Black	197602	PUN-4x0,75-S-0,5-SW
			45	1	0.284	27	Blue	197588	PUN-4x0,75-S-1-BL
							Black	197603	PUN-4x0,75-S-1-SW
			70	1.5	0.384	42	Blue	197589	PUN-4x0,75-S-1,5-BL
							Black	197604	PUN-4x0,75-S-1,5-SW
6	4	46	23	1	0.344	51	Blue	197590	PUN-6x1-S-1-BL
							Black	197605	PUN-6x1-S-1-SW
			52	2	0.518	110	Blue	197591	PUN-6x1-S-2-BL
							Black	197606	PUN-6x1-S-2-SW
			168	6	1.214	350	Blue	197592	PUN-6x1-S-6-BL
							Black	197607	PUN-6x1-S-6-SW
8	5.7	60	12	1	0.304	65	Blue	197593	PUN-8x1,25-S-1-BL
							Black	197608	PUN-8x1,25-S-1-SW
			27	2	0.424	140	Blue	197594	PUN-8x1,25-S-2-BL
							Black	197609	PUN-8x1,25-S-2-SW
			87	6	0.904	440	Blue	197595	PUN-8x1,25-S-6-BL
							Black	197610	PUN-8x1,25-S-6-SW
10	7	80	9.5	1	0.305	110	Blue	197596	PUN-10x1,5-S-1-BL
							Black	197611	PUN-10x1,5-S-1-SW
			22	2	0.43	250	Blue	197597	PUN-10x1,5-S-2-BL
							Black	197612	PUN-10x1,5-S-2-SW
			70	6	0.91	760	Blue	197598	PUN-10x1,5-S-6-BL
							Black	197613	PUN-10x1,5-S-6-SW
12	8	95	9	1	0.32	200	Blue	197599	PUN-12x2-S-1-BL
							Black	197614	PUN-12x2-S-1-SW
			20	2	0.452	420	Blue	197600	PUN-12x2-S-2-BL
							Black	197615	PUN-12x2-S-2-SW
			64	6	0.98	1300	Blue	197601	PUN-12x2-S-6-BL
							Black	197616	PUN-12x2-S-6-SW

# Spiral plastic tubing PUN-S-DUO

Technical data



## 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,

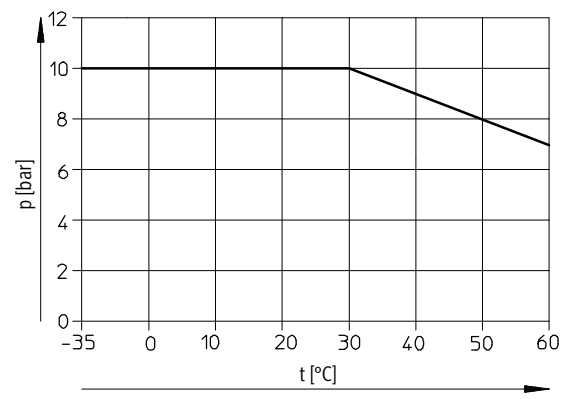
the paired tubing is separated to the required length at both ends.




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
Approval	German Technical Control Board (TÜV)


### Operating pressure p as a function of temperature t





### Possible fittings


- 

Push-in fitting QS, Quick Star<sup>1)</sup>  
→ Internet: qs
- 

Push-in fitting QS-B, Quick Star<sup>1)</sup>  
→ 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.



# Spiral plastic tubing PUN-S-DUO

Technical data

**FESTO**

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

Dimensions and ordering data									
O.D.	I.D.	Winding Ø	Number of windings	Working length	Block length	Weight	Colour	Part No.	Type
[mm]	[mm]	[mm]		[m]	[m]	[g]			
4	2.6	25	20	0.5	0.268	25	Blue/black	<b>197617</b>	<b>PUN-4x0,75-S-0,5-DUO-BS</b>
			45	1	0.468	55		<b>197618</b>	<b>PUN-4x0,75-S-1-DUO-BS</b>
			70	1.5	0.668	84		<b>197619</b>	<b>PUN-4x0,75-S-1,5-DUO-BS</b>
6	4	46	23	1	0.488	102	Blue/black	<b>197620</b>	<b>PUN-6x1-S-1-DUO-BS</b>
			52	2	0.836	230		<b>197621</b>	<b>PUN-6x1-S-2-DUO-BS</b>
			168	6	2.228	700		<b>197622</b>	<b>PUN-6x1-S-6-DUO-BS</b>
8	5.7	60	12	1	0.408	130	Blue/black	<b>197623</b>	<b>PUN-8x1,25-S-1-DUO-BS</b>
			27	2	0.648	280		<b>197624</b>	<b>PUN-8x1,25-S-2-DUO-BS</b>
			87	6	1.608	870		<b>197625</b>	<b>PUN-8x1,25-S-6-DUO-BS</b>
10	7	80	9.5	1	0.41	220	Blue/black	<b>197626</b>	<b>PUN-10x1,5-S-1-DUO-BS</b>
			22	2	0.66	490		<b>197627</b>	<b>PUN-10x1,5-S-2-DUO-BS</b>
			70	6	1.62	1520		<b>197628</b>	<b>PUN-10x1,5-S-6-DUO-BS</b>
12	8	95	9	1	0.44	390	Blue/black	<b>197629</b>	<b>PUN-12x2-S-1-DUO-BS</b>
			20	2	0.704	830		<b>197630</b>	<b>PUN-12x2-S-2-DUO-BS</b>
			64	6	1.76	2600		<b>197631</b>	<b>PUN-12x2-S-6-DUO-BS</b>

# Spiral plastic tubing PUN-SG, pre-assembled

Technical data

FESTO

## Spiral plastic tubing PUN-SG

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



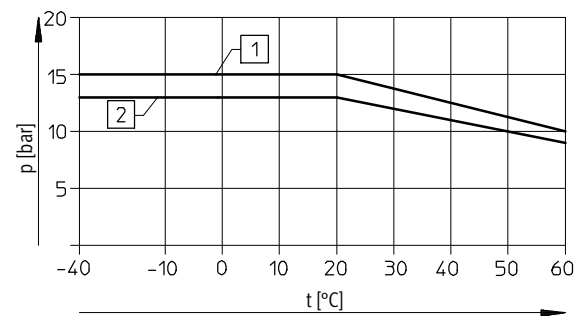
General technical data		
Type	PUN-10x1,5-SG	PUN-12x2-SG
Pneumatic connection 1, 2	Male thread G1/4	Male thread G3/8
Nominal tightening torque [Nm]	11 ±20%	12.5 ±20%

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 <sup>1)</sup>	1	

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. For dry indoor applications 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
Tube	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										
O.D.	I.D.	Flow-relevant bending radius	Winding Ø	Number of windings	Working length	Block length	Weight	Colour	Part No.	Type
[mm]	[mm]	[mm]	[mm]		[m]	[m]	[g]			
9.5	6.4	50	42	21	2.4	0.889	180	Blue	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	Blue	533466	PUN-12x2-SG-4,8-BL-3/8
				53	6	1.312	560		533467	PUN-12x2-SG-6-BL-3/8

# Spiral plastic tubing PPS, pre-assembled

Technical data

## Spiral plastic tubing PPS

This hydrolysis-resistant plastic tubing demonstrates high thermal and mechanical load capacities. Each tubing length is delivered ready for

installation with 2 rotatable connectors and captive O-ring sealing rings. Kinks at the tubing ends are prevented by the anti-kinking springs.

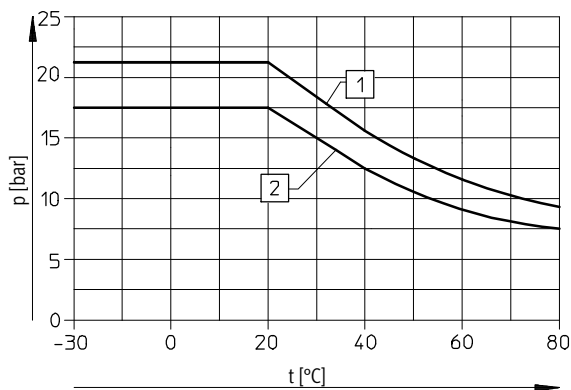


General technical data		
Pneumatic connection 1, 2	Male thread G1/4	
Nominal tightening torque [Nm]	11 ±20%	
Operating and environmental conditions		
Type	PPS-4	PPS-6
Temperature-dependent operating pressure [bar]	-0.95 ... +21.2 → graph	-0.95 ... +17.2 → graph
Operating medium	Compressed air to ISO 8573-1:2010 [7:-:-]	
Ambient temperature [°C]	-30 ... +80	
Corrosion resistance class CRC <sup>1)</sup>	1	

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. For dry indoor applications 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	
Tube	PA12-P
Connecting thread	Brass
Protection against kinking	Galvanised steel
Note on materials	RoHS-compliant

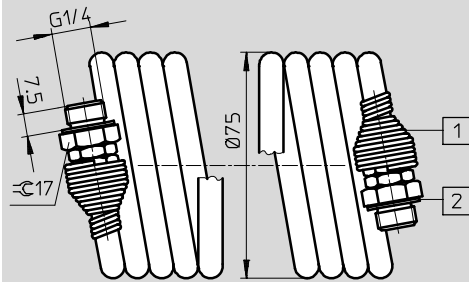
# Spiral plastic tubing PPS, pre-assembled

Technical data

FESTO

## Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)



- 1 Kink protection spring
- 2 Captive seal

## Ordering data

O.D. [mm]	I.D. [mm]	Winding Ø [mm]	Number of windings	Working length [m]	Block length [m]	Weight [g]	Colour	Part No.	Type
6.3	4.7	75	44	7.5	0.34	249	Blue	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	Blue	19796	PPS-6-7,5-1/4-BL
			86	15	0.80	500		19797	PPS-6-15-1/4-BL