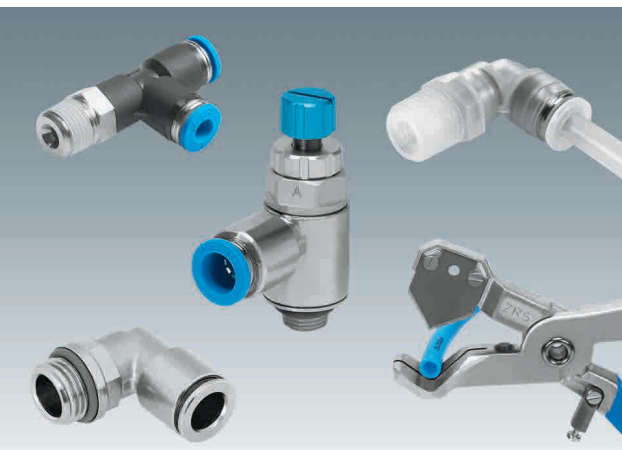


FESTO

The Pneumatics Installation Guide



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

“Everything from a single source!” – The variety of our installation range is what enables us to provide a competent solution to all manner of industrial requirements, no matter how diverse these may be.

Festo’s Pocket Guide to Pneumatic Installation will help you to select the right combination of products from the many fittings and connectors, the non-return, pressure control and flow control valves and tubing options.

For your convenience and for increased productivity.

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More information



Whenever you see this symbol in the printed or electronic catalogue, it means the product is from our core product range for the main applications of automation technology.

The symbol provides you with quick guidance, and makes it easier to place your order. Unless otherwise specified, all products included in this range are in stock and ready for immediate delivery.

Key

D1 Pneumatic connection 1

D2 Pneumatic connection 2

D3 Pneumatic connection 3

D5 Male thread for hex nut

Di For tubing I.D.

n No. of inputs/outputs

qnN The standard nominal flow rate q_{nN} is the flow rate based on standard conditions at an operating pressure of $p_1 = 6$ bar and an output pressure of $p_2 = 5$ bar, measured at room temperature $t = 20$ °C.

★ Product from our core product range for easy selection and quick ordering

Well combined: Tubing/fitting combinations for all individual situations

While many of our competitors focus on tubing or on threaded fittings, the Festo range is characterised by our trademark system solution approach. It has been consistently enhanced in recent years in terms of both tubing and fittings, with considerable effort going into ensuring application-specific tubing/fitting combinations that are optimally harmonised.

The perfect choice of tube and threaded fitting combination depends mainly on the exact place of installation. Each individual case is characterised by a series of different requirements for tubing/ threaded fitting combinations. However cases can often be pinned down using a single feature for rapid orientation.

A glance at the overview of our most popular tubing/threaded fitting combinations will help you to make the right choice quickly and reliably

Product finder for tubing and fittings

ESimply open in the electronic catalogue. Enter your application requirements and let our system guide you quickly and reliably to an appropriate solution. This makes selecting extremely convenient!

Get started by following these links:

- ➔ www.festo.com/productfinder/tubing
- ➔ www.festo.com/productfinder/fittings

1 Tubing/fitting combinations

Tubing	suitable for Fitting	One-way flow con- trol valve	Applications
 Standard			
PEN  → 20	QS-B  → 54	GRLA  → 173	Suitable for a wide range of tasks and attractively priced. Flexible and high level of abrasion resistance
PUN  → 25	QS  → 67	GRLA  → 174	Maximum flexibility in standard applications thanks to an extremely wide range of options for combining the different types
PAN  → 15	QS  → 67	GRLA-F  → 174	For standard applications with extended characteristics
 High pressures			
PAN-MF  → 17	NPQM  → 90	GRLA  → 177	Ideal for use in mobile pneumatics, even at low temperatures
PAN-R  → 17	NPQH  → 96	GRLA-F  → 174	High-performance, with extended pressure range, high durability and corrosion resistance

1 Tubing/fitting combinations

Tubing	suitable for Fitting	One-way flow con- trol valve	Applications
 Resistant to chemicals, suitable for the food industry and hydrolysis resistant			
PLN  → 23	NPQP  → 104	GRLA-F  → 174	Resistant to cleaning agents, FDA compliant and economical
PUN-H  → 29	NPKA  → 116	–	Hydrolysis resistant and suitable for water applications. Very easy to install thanks to the “one click principle”
PFAN  → 19	NPQH  → 95	GRLA-F  → 174	Up to 150 °C. Suitable for use in the food industry, FDA compliant and resistant to cleaning agents.
PFAN  → 19	NPCK  → 122	CRGRLA  → 179	Easy-to-clean thanks to Clean Design, maximum corrosion resistance (CRC 4) and FDA-compliant
PFAN  → 19	CRQS  → 108	CRGRLA  → 179	Maximum resistance to corrosion (CRC 4) and aggressive acids and lyes
 Anti-static			
PUN-CM  → 28	NPQM  → 89	GRLA  → 177	Maximum protection for electrical and electronic components

1 Tubing/fitting combinations

Tubing	suitable for Fitting	One-way flow con- trol valve	Applications
 Flame-retardant			
PUN-V0  → 32	NPQM  → 89	GRLA-F  → 174	For areas with high risk of fire, flame-retardant tubing, tested as per DIN 5510-2
 Resistant to welding spatter			
PUN-V0-C  → 33	NPQH  → 95	GRLA  → 177	Ideal for applications in areas involving welding spatter
PAN-V0  → 18	QS-V0  → 113	GRLA  → 177	Double-wall tubing with special fitting, reliable in applications involving welding spatter

Many questions regarding media resistance are answered here:
 → www.festo.com/mediaresistance



2 Tubing/pipes

2.1 Plastic tubing

Selection aid

12

Tubing – the flexible transmission component

Tubing is indispensable in connecting pneumatic valves, cylinders and decentralised compressed air preparation systems because of its flexibility and low space requirement. Festo offers a full tubing range, optimised for special requirements.

Further information

➔ www.festo.com/catalogue

2.1 Plastic tubing

Selection aid

Material	Type	Suitable for the food industry	Fire protection classification to UL 94	Antistatic
Standard O.D. tubing				
Polyamide	PAN	–	–	–
Polyamide	PAN-R	–	–	–
Polyamide	PAN-MF	–	–	–
Polyamide	PAN-V0	–	■	–
Perfluoralkoxyalkan	PFAN	■	■	–
Polyethylene	PEN	–	–	–
Polyethylene	PLN	■	–	–
Polyurethane	PUN	–	–	–
Polyurethane	PUN-DUO	–	–	–
Polyurethane	PUN-CM	–	–	■
Polyurethane	PUN-H	■	–	–
Polyurethane	PUN-H-DUO	■	–	–
Polyurethane	PUN-V0	–	■	–
Polyurethane	PUN-V0-C	–	■	–
Standard I.D. tubing				
Polyurethane	PU	–	–	–
Polyurethane ¹⁾	PU-9/13	–	–	–
Polyvinyl chloride	PCN	–	–	–
Nitrile rubber	P	–	–	–
Spiral tubing				
Polyurethane	PUN-S	–	–	–
Polyurethane	PUN-S-DUO	–	–	–
Spiral tubing, pre-assembled				
Polyurethane	PUN-SG	–	–	–
Polyamide	PPS	–	–	–

■ Criterion met

1) fibre-reinforced

– Unsuitable

2.1 Plastic tubing

Selection aid

Type	Halogen-free	Suitable for chain link trunking	UV radiation	Resistance		Page
				Hydrolysis	Chemicals	
Standard O.D. tubing						
PAN	■	++	+	++	+	15
PAN-R	■	++	+	++	+	17
PAN-MF	■	+++	+	++	+	17
PAN-V0	—	++	++	++	+	18
PFAN	—	—	++	+++	+++	19
PEN	■	+++	++ ²⁾	+++	++	20
PLN	■	—	++ ²⁾	+++	++	23
PUN	■	++	++ ²⁾	+	—	25
PUN-DUO	■	++	+	+	—	27
PUN-CM	■	+++	++	++	+	28
PUN-H	■	++	++ ²⁾	++	+	29
PUN-H-DUO	■	++	+	++	+	32
PUN-V0	■	++	++ ²⁾	++	+	32
PUN-V0-C	■	++	++ ²⁾	++	+	33
Standard I.D. tubing						
PU	■	■	++ ²⁾	+	—	35
PU-9/13	■	■	+	+	—	35
PCN	—	—	—	—	—	35
P	—	—	—	—	—	35
Spiral tubing						
PUN-S	■	■	—	+	—	36
PUN-S-DUO	■	■	—	+	—	37
Spiral tubing, pre-assembled						
PUN-SG	■	—	—	++	+	37
PPS	■	—	—	+	+	38

■ Criterion met

+++ Very well suited

++ Well suited

+ Limited suitability (upon request)

– Unsuitable

2) Applies to black colour

2.1 Plastic tubing

Tubing/fitting combination

Type	Fitting											Page
	QS-B ¹⁾	QS, QSM ¹⁾	NPQM ²⁾	NPQH ²⁾	NPQP ³⁾	CRQS ⁴⁾	QS-V0 ⁴⁾	NPCK ⁵⁾	NPKA ⁶⁾	CN ⁷⁾	CK ⁸⁾	
Standard O.D. tubing												
PAN	++	++	++	++	++	++	+	++	++	++	++	15
PAN-R	++	++	++	++	++	++	+	–	++	–	–	17
PAN-MF	++	++	++	++	++	++	+	–	–	–	–	17
PAN-V0	+	+	+	+	+	+	++	–	–	–	–	18
PFAN	++	++	++	++	++	++	+	++	++	++	++	19
PEN	++	++	++	++	++	++	+	++	++	++	++	20
PLN	++	++	++	++	++	++	+	++	++	+	++	23
PUN	++	++	++	++	++	++	+	++	++	++	++	25
PUN-DUO	++	++	++	++	++	++	+	++	++	++	++	27
PUN-CM	+	+	++	++	+	+	+	++	+	+	+	28
PUN-H	++	++	++	++	++	++	+	++	++	–	++	29
PUN-H-DUO	++	++	++	++	++	++	+	++	++	–	++	32
PUN-V0	+	+	++	++	+	++	+	++	+	+	++	32
PUN-V0-C	+	+	++	++	+	++	+	–	–	–	–	33
Page	51	59	89	95	103	107	111	121	115	123	127	

1) Not for tubing outside diameter 14

2) Not for tubing outside diameters 3 and 16

3) Not for tubing outside diameters 3, 14 and 16

4) Not for tubing outside diameters 3 and 14

5) Only for tubing outside diameters 4 ... 10

6) Only for tubing outside diameters 6

7) Only for tubing outside diameters 3 ... 8

8) Only for tubing outside diameters 4 ... 8

++ Well suited

+ Limited suitability (upon request)

– Unsuitable

■ Recommended Tubing/fitting screw connection combination

2.1.1 Plastic tubing with standard O.D.

PAN

Type	D1	di	Tubing colour	TN
PAN	4	2.9	natural	546284
			silver	152697
			silver ¹⁾	553888
			blue	553906
			blue ¹⁾	553894
			black	553912
			black ¹⁾	553900
			green	553918
			red	553924
			yellow	553930
	6	4	natural	546285
			silver	152699
			silver ¹⁾	553889
			blue	553907
			blue ¹⁾	553895
			black	553913
			black ¹⁾	553901
			green	553919
			red	553925
			yellow	553931
	8	5.9	natural	546286
			silver	152700
			silver ²⁾	553890
			blue	553908
			blue ²⁾	553896
			black	553914
			black ²⁾	553902
			green	553920
			red	553926
			yellow	553932

1) packaging unit 500 m

2) packaging unit 400 m

2.1.1 Plastic tubing with standard O.D.

PAN

Type	D1	di	Tubing colour	Part No.
PAN	10	7	natural	546287
			silver	152701
			silver ¹⁾	553891
			blue	553909
			blue ¹⁾	553897
			black	553915
			black ¹⁾	553903
			green	553921
			red	553927
			yellow	553933
	12	8.4	natural	546288
			silver	152702
			silver ²⁾	553892
			blue	553910
			blue ²⁾	553898
			black	553916
			black ²⁾	553904
			green	553922
			red	553928
			yellow	553934
	14	10	silver	570392
	16	12	natural	546289
			silver	152703
			silver ³⁾	553893
			blue	553911
			blue ³⁾	553899
			black	553917
			black ³⁾	553905
			green	553923
			red	553929
			yellow	553935

1) packaging unit 300 m

2) packaging unit 200 m

3) packaging unit 100 m

2.1.1 Plastic tubing with standard O.D.

PAN-R

Type	D1	di	Tubing colour	Part No.
PAN-R	4	2.5	silver	541674
	6	3.8	silver	541675
	8	5	silver	541676
	10	6.2	silver	541677
	12	7.6	silver	541678
	16	10	silver	541679
	22	18	silber	8036207
	28	23	silber	8036208

PAN-MF

Type	D1	di	Tubing colour	Part No.
PAN-MF	4	2.5	black	570357
			black ¹⁾	572091
	6	4	black	570358
			black ¹⁾	572093
	8	6	black	570359
	10	7.5		570360
	12	9		570361
	14	10		570362
	16	12		570363

1) packaging unit 500 m

2.1.1 Plastic tubing with standard O.D.

PAN-V0

Type	D1	di	Tubing colour	Part No.
PAN-V0	4	0.75	blue ¹⁾	132899
			black ¹⁾	160550
	6	4	blue ¹⁾	132905
			green ²⁾	525470
			red ²⁾	525474
			white ²⁾	525478
			yellow ²⁾	525482
			brown ²⁾	525486
	8	6	black ¹⁾	160551
			blue ¹⁾	132906
			green ²⁾	525471
			red ²⁾	525475
			white ²⁾	525479
			yellow ²⁾	525483
			brown ²⁾	525487
	10	7.5	black ¹⁾	160552
			blue ¹⁾	132907
			green ²⁾	525472
			red ²⁾	525476
			white ²⁾	525480
			yellow ²⁾	525484
			brown ²⁾	525488
	12	9	black ¹⁾	160553
			blue ²⁾	525469
			green ²⁾	525473
			red ²⁾	525477
			white ²⁾	525481
			yellow ²⁾	525485
			brown ²⁾	525489

1) packaging unit 50 m

2) packaging unit 20 m

PAN



Configurable product



This product and all its variants can be ordered via the configurator, which can be found online at www.festo.com/catalogue/...

Enter „PAN“ or the configuration part number „553610“.

2.1.1 Plastic tubing with standard O.D.

PFAN

Type	D1	di	Tubing colour	Part No.
PFAN	4	2.9	natural	197061
	6	4		197062
	8	5.9		197063
	10	7		197064
	12	8.4		197065

2.1.1 Plastic tubing with standard O.D.

PEN

Type	D1	di	Tubing colour	Part No.
PEN	4	2.7	silver	551462
			silver ¹⁾	551450
			natural	543246
			black	543240
			black ¹⁾	551438
			blue	551456
			blue ¹⁾	551444
			green	551468
			red	551474
			yellow	551480
	6	4	silver	551463
			silver ¹⁾	551451
			natural	543247
			black	543241
			black ¹⁾	551439
			blue	551457
			blue ¹⁾	551445
			green	551469
			red	551475
			yellow	551481
	8	5.7	silver	551464
			silver ²⁾	551452
			natural	543248
			black	543242
			black ²⁾	551440
			blue	551458
			blue ²⁾	551446
			green	551470
			red	551476
			yellow	551482

1) packaging unit 500 m

2) packaging unit 400 m

2.1.1 Plastic tubing with standard O.D.

PEN

Type	D1	di	Tubing colour	Part No.
PEN	10	7	silver	551465
			silver ¹⁾	551453
			natural	543249
			black	543243
			black ¹⁾	551441
			blue	551459
			blue ¹⁾	551447
			green	551471
			red	551477
			yellow	551483
	12	8.4	silver	551466
			silver ²⁾	551454
			natural	543250
			black	543244
			black ²⁾	551442
			blue	551460
			blue ²⁾	551448
			green	551472
			red	551478
			yellow	551484
	14	9.5	natural	570517
			black	570516
	16	10.8	silver	551467
			silver ³⁾	551455
			natural	543251
			black	543245
			black ³⁾	551443
			blue	551461
			blue ³⁾	551449
			green	551473
			red	551479
			yellow	551485

1) packaging unit 300 m

2) packaging unit 200 m

3) packaging unit 100 m

**2.1.1 Plastic tubing
with standard O.D.**

PEN

☐☐☐

Configurable product

☐ This product and all its variants can be ordered via the configurator, which can be found online at www.festo.com/catalogue/...
Enter „PEN“ or the configuration part number „553769“.

2.1.1 Plastic tubing with standard O.D.

PLN

Type	D1	di	Tubing colour	Part No.
PLN	4	2.9	silver	558211
			natural	193403
			black	195280
			blue	558205
			red	558217
	6	4	silver	558212
			natural	193404
			black	195281
			blue	558206
			red	558218
	8	5.9	silver	558213
			natural	193405
			black	195282
			blue	558207
			red	558219
	10	7	silver	558214
			natural	193406
			black	195283
			blue	558208
			red	558220
	12	8.4	silver	558215
			natural	193407
			black	195284
			blue	558209
			red	558221
	14	10	natural	570424
			black	570423
	16	12	silver	558216
			natural	539064
			black	539065
			blue	558210
			red	558222

**2.1.1 Plastic tubing
with standard O.D.**

PLN

☐☐☐

Configurable product

This product and all its variants can be ordered via the configurator, which can be found online at www.festo.com/catalogue/...
Enter „PLN“ or the configuration part number „553850“.

2.1.1 Plastic tubing with standard O.D.

PUN

Type	D1	di	Tubing colour	Part No.
PUN	3	2.1	silver	★ 152583
			silver ¹⁾	525738
			blue	★ 159660
			blue ¹⁾	525745
			black	★ 159661
			black ¹⁾	553936
			yellow	178416
			green	178423
			red	178409
	4	2.6	silver	★ 152584
			silver ¹⁾	525739
			blue	★ 159662
			blue ¹⁾	525746
			black	★ 159663
			black ¹⁾	553937
			yellow	178417
			green	178424
			red	178410
	6	4.0	silver	★ 152586
			silver ¹⁾	525740
			blue	★ 159664
			blue ¹⁾	525747
			black	★ 159665
			black ¹⁾	553938
			yellow	178418
			green	178425
			red	178411
	8	5.7	silver	★ 152587
			silver ²⁾	525741
			blue	★ 159666
			blue ²⁾	525748
			black	★ 159667
			black ²⁾	553939
			yellow	178419
			green	178426
			red	178412

1) packaging unit 500 m

2) packaging unit 400 m

2.1.1 Plastic tubing with standard O.D.

PUN

Type	D1	di	Tubing colour	Part No.
PUN	10	7	silver	★ 152588
			silver ¹⁾	525742
			blue	★ 159668
			blue ¹⁾	525749
			black	★ 159669
			black ¹⁾	553940
			yellow	178420
			green	178427
			red	178413
	12	8	silver	★ 152589
			silver ²⁾	525743
			blue	★ 159670
			blue ²⁾	525750
			black	★ 159671
			black ²⁾	553941
			yellow	178421
			green	178428
			red	178414
	14	9.8	silver	★ 570389
			blue	★ 570390
			black	★ 570391
	16	11	silver	★ 152590
			silver ³⁾	525744
			blue	★ 159672
			blue ³⁾	525751
			black	★ 159673
			black ³⁾	553942
			yellow	178422
			green	178429
			red	178415

1) packaging unit 300 m

2) packaging unit 200 m

3) packaging unit 100 m

2.1.1 Plastic tubing with standard O.D.

PUN-DUO

Type	D1	di	Tubing colour	Part No.
PUN-DUO	4	2.8	silver	152822
		2.6	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

**2.1.1 Plastic tubing
with standard O.D.**

PUN-CM
antistatic

Type	D1	di	Tubing colour	Part No.
PUN-CM	4	2.5	black	188882
	6	4		188883
	8	5		130816
	10	6.5		130817
	12	8		130818

2.1.1 Plastic tubing with standard O.D.

PUN-H

Type	D1	di	Tubing colour	Part No.
PUN-H	2	1.2	natural	133038
			black	★ 133039
			red	133040
	3	2.1	natural	197375
			natural ¹⁾	558263
			blue	★ 197382
			blue ¹⁾	558256
			black	★ 197389
			black ¹⁾	558249
			silver	★ 558277
			silver ¹⁾	558270
			red	558284
			green	558291
			yellow	558298
	4	2.6	natural	197376
			natural ¹⁾	558264
			blue	★ 197383
			blue ¹⁾	558257
			black	★ 197390
			black ¹⁾	558250
			silver	★ 558278
			silver ¹⁾	558271
			red	558285
			green	558292
			yellow	558299
	6	4	natural	197377
			natural ¹⁾	558265
			blue	★ 197384
			blue ¹⁾	558258
			black	★ 197391
			black ¹⁾	558251
			silver	★ 558279
			silver ¹⁾	558272
			red	558286
			green	558293
			yellow	558300

1) packaging unit 500 m

2.1.1 Plastic tubing with standard O.D.

PUN-H

Type	D1	di	Tubing colour	Part No.
PUN-H	8	5.7	natural	197378
			natural ¹⁾	558266
			blue	★ 197385
			blue ¹⁾	558259
			silver	★ 197392
			black ¹⁾	558252
			silver	★ 558280
			silver ¹⁾	558273
			red	558287
			green	558294
			yellow	558301
	10	7	natural	197379
			natural ²⁾	558267
			blue	★ 197386
			blue ²⁾	558260
			black	★ 197393
			black ²⁾	558253
			silver	★ 558281
			silver ²⁾	558274
			red	558288
			green	558295
			yellow	558302
	12	8	natural	197380
			natural ³⁾	558268
			blue	★ 197387
			blue ³⁾	558261
			black	★ 197394
			black ³⁾	558254
			silver	★ 558282
			silver ³⁾	558275
			red	558289
			green	558296
			yellow	558303

1) packaging unit 400 m

2) packaging unit 300 m

3) packaging unit 200 m

2.1.1 Plastic tubing with standard O.D.

PUN-H

Type	D1	di	Tubing colour	Part No.
PUN-H	14	9.8	natural	★ 570388
			black	★ 570387
			blue	★ 570386
	16	11	natural	197381
			natural ¹⁾	558269
			blue	★ 197388
			blue ¹⁾	558262
			black	★ 197395
			black ¹⁾	558255
			silver	★ 558283
			silver ¹⁾	558276
			red	558290
			green	558297
			yellow	558304

1) packaging unit 100 m

2.1.1 Plastic tubing with standard O.D.

PUN-H-DUO

Type	D1	di	Tubing colour	Part No.
PUN-H-DUO	4	2.6	blue/black	197396
	6	4		197397
	8	5.7		197398
	10	7		197399

PUN-V0

Type	D1	di	Tubing colour	Part No.
PUN-V0	6	4	black	525438
			blue	525442
			green	525446
			red	525450
			white	525454
			yellow	525458
			brown	525462
	8	5.7	black	525439
			blue	525443
			green	525447
			red	525451
			white	525455
			yellow	525459
			brown	525463
	10	7	black	525440
			blue	525444
			green	525448
			red	525452
			white	525456
			yellow	525460
			brown	525464
	16	11.8	black	570767
			blue	570768

2.1.1 Plastic tubing with standard O.D.

PUN-V0-C flame-retardant

Type	D1	di	Tubing colour	Part No.
PUN-V0-C	4	2	black	570349
			blue	570350
	6	2	black	561698
			blue	561702
			green	561706
			red	561710
			white	561714
			yellow	561718
			brown	561722
	8	4	black	561699
			blue	561703
			green	561707
			red	561711
			white	561715
			yellow	561719
			brown	561723
	10	6	black	561700
			blue	561704
			green	561708
			red	561712
			white	561716
			yellow	561720
			brown	561724
	12	8	black	561701
			blue	561705
			green	561709
			red	561713
			white	561717
			yellow	561721
			brown	561725
	14	9.8	black	570351
			blue	570352
	16	11	black	570353
			blue	570354

**2.1.1 Plastic tubing
with standard O.D.**

PUN

☐☐

☐**Configurable product**

☐ This product and all its variants can be ordered via the configurator, which can be found online at www.festo.com/catalogue/...
Enter „PUN“ or the configuration part number „553573“.

2.1.2 Plastic tubing with standard I.D.

PU

Type	D1	di	Tubing colour	Part No.
Fibre-reinforced				
PU	11.6	9	black	12134
	17.6	13		12133

PCN

for use with condensate drains on D series service units

Type	D1	di	Tubing colour	Part No.
PCN	6.5	4	natural	7134

P

Tubing for barbed hose fitting N

Type	D1	di	Tubing colour	Part No.
P	13	6	blue	2231
	16	9		2232
	23	13	black	2234
	31	19		2235

2.1.3 Spiral plastic tubing

PUN-S

Type	D1	di	Working length [m]	Tubing colour	Part No.
PUN-S	4	2.6	0.5	blue	197587
				black	197602
			1	blue	197588
				black	197603
			1.5	blue	197589
				black	197604
	6	4	1	blue	197590
				black	197605
			2	blue	197591
				black	197606
			6	blue	197592
				black	197607
	8	5.7	1	blue	197593
				black	197608
			2	blue	197594
				black	197609
			6	blue	197595
				black	197610
	10	7	1	blue	197596
				black	197611
			2	blue	197597
				black	197612
			6	blue	197598
				black	197613
	12	8	1	blue	197599
				black	197614
			2	blue	197600
				black	197615
			6	blue	197601
				black	197616

2.1.3 Spiral plastic tubing

PUN-S-DUO

Type	D1	di	Working length [m]	Tubing colour	Part No.
PUN-S-DUO	4	2.6	0.5	blue/black	197617
			1		197618
			1.5		197619
	6	4	1		197620
			2		197621
			6		197622
	8	5.7	1		197623
			2		197624
			6		197625
	10	7	1		197626
			2		197627
			6		197628
	12	8	1		197629
			2		197630
			6		197631

PUN-SG

with 2 threaded fittings G¹/₄ and G³/₈

Type	D1	di	Working length [m]	Tubing colour	Part No.
PUN-SG	9.5	6.4	2.4	blue	533463
			4.8		533464
			6		533465
	11.7	7.9	4.8		533466
			6		533467

2.1.3 Spiral plastic tubing

PPS

with 2 threaded fittings G¹/₄

Type	D1	di	Working length [m]	Tubing colour	Part No.
PPS	6.35	4.75	7.5	blue	19798
			15		19799
	7.95	6.35	7.5		19796
			15		19797
Free of copper, PTFE and silicone					
PPS	6.35	4.75	7.5	blue	165871
			15		165870
	7.95	6.35	7.5		165873
			15		165872



2 Tubing/pipes

2.2 Pipes Selection aid

40

Pipes

Ideally suited for supplying compressed air within machines and also for small compressed air networks within buildings: compressed air piping PQ. Available in both aluminium and polyamide designs, the PQ range is the perfect complement for the push-fit system CQ. And regardless of whether plastic or aluminium – both designs ensure optimum flow conditions thanks to their smooth inside walls.

Further information

➔ www.festo.com/catalogue

2.2

Pipes

Selection aid

Design	Type	Page
Polyamide pipe		
	PQ-PA	41
Aluminium pipe		
	PQ-AL	41
Pipe clamp		
	PQ-RK-...-B	42
Pipe cutter		
	ZR	42

2.2.1 PQ, compressed air piping

Polyamide pipe



Type	O.D.	Part No.
PQ-PA	12	177728
	15	177729
	18	177730
	22	177731
	28	194594

Operating medium: Compressed air, vacuum and liquids
Operating pressure: -0.95 ... 7 bar
Ambient temperature: -25 ... +75 °C

Aluminium pipe



Type	O.D.	Part No.
PQ-AL	12	177732
	15	177733
	18	177734
	22	177735
	28	194593

Operating medium: Compressed air, vacuum and liquids
Operating pressure: -0.95 ... 7 bar
Ambient temperature: -30 ... +75 °C

2.2.1 PQ, compressed air piping

Pipe clamp



Type	For pipes with O.D.	Part No.
PQ-RK...-B	12	550595
	15	550596
	18	550597
	22	550598
	28	550599

Pipe cutter



Type		Part No.
ZR	Pipe cutter	194592

The right fitting for every task

Festo's range of fittings 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 is sure to include the most appropriate fitting for every application.

Our fittings and connection technology are designed to be as straightforward as possible to make installation truly quick and easy – without compromising on process reliability.

Polymer:

- NPQP:
Solvent-resistant series,
Polypropylene
- QSM-B/QS-B:
Standard series with core

3 Fittings

3.1 For standard O.D. tubing:

Selection aid

- Push-in fittings 44
- Multiple distributors 47
- Function fittings and special function connectors 48
- Push-in connectors 49

functions for simple applications

- QSM/QS:
Standard series with a wide range of variants for standard applications
- QS-V0:
Welding spatter resistant series for applications involving flying sparks
- NPKA:
Cleanroom compatible series

Metal:

- NPQM:
Cost-optimised metal series, nickel-plated brass
- NPQH:
Highly versatile all-metal series, nickel-plated brass
- CRQS:
Extremely sturdy stainless steel series

Further information

➔ www.festo.com/catalogue

3.1 Push-in fittings Selection aid

Straight design

Variant	Type	Page
Male thread with external hex		
	QSM-B	52
	QS-B	54
	QSM	60
	QS	67
	NPQM-D...	90
	NPQH-D	96
	NPQP-D...	104
	CRQS	108
	QS-V0	112
Male thread with internal hex		
	QSM-B-...-I	52
	QS-B-...-I	54
	QSM-...-I	60
	QSMP	61
	QS-...-I	68
	NPQM-DK...	90
	NPQH-DK	96
	CRQS-...-I	108
Female thread with external hex		
	QSMF	61
	QSF	68
	NPQM-D...	90
	NPQH-D	96

Straight design

Variant	Type	Page
Male thread with push-in connection		
	NPKA-D	116
Male thread with push-in sleeve		
	NPQH-D	96
Push-in bulkhead fitting		
Female thread with external hex		
	QSSF	69
	NPQH-H	97
Round release ring		
	QSM-...-I-R	61

QSM Mini
 QS Standard
 NPQM Brass (nickel-plated)
 NPQP Polypropylene
 NPKA Polymer

QS-V0 Resistant to welding spatter
 NPQH Brass (nickel-plated)
 CRQS Stainless steel

3.1 Push-in fittings

Selection aid

L-shape

Variant	Type	Page
360° orientable, Male thread with external hex		
	QSML-B	53
	QSL-B	55
	QSML	63
	QSL	71
	QSLV	73
	NPQH-L	99
	CRQSL	109
	QSLL-B	55
	QSMLL	63
	QSLL	72
	NPQH-LL	99
Male thread with external hex		
	NPQM-L...	90
	NPQM-LK...	93
	NPQP-L...	104
	NPQP-LQ...	104
	QSL-V0	113
360° orientable with internal hex		
	QSMLV-...I	64
	QSMLLV-...I	64
Female thread with external hex		
	QSLF	72

L-shape

Variant	Type	Page
360° orientable, Male thread with internal hex		
	QSLV-...I	73
Male thread with internal hex		
	NPQM-LK...	93
Male thread with external hex		
	NPKA-L	116

3.1 Push-in fittings

Selection aid

T-shape

Variant	Type	Page
360° orientable, Male thread with external hex		
	QSMT-B	53
	QST-B	56
	QSMTL	65
	QST	75
	QSTL	77
	NPQH-T	100
	CRQST	109
Male thread with external hex		
	NPQM-T...	91
	NPQP-T...	104
	QST-V0	114
360° orientable, Male thread with internal hex		
	QSTL-B	56
360° orientable with male and female thread		
	QSTF	76

W-Form

Variant	Type	Page
360° orientable Male thread		
	QSW	77

Y-shape

Variant	Type	Page
360° orientable, Male thread with external hex		
	QSY-B	57
	QSY	78
Male thread with external hex		
	NPQP-Y...	105
	QSYL	80
	QSYLV	80
Male and female thread with external hex		
	QSYTF	81

QSM Mini
 QS Standard
 NPQM Brass (nickel-plated)
 NPQP Polypropylene
 NPKA Polymer

QS-V0 Resistant to welding spatter
 NPQH Brass (nickel-plated)
 CRQS Stainless steel

3.1 Multiple distributors

Selection aid

L-shape

Variant	Type	Page
2 series outlets 360° orientable		
	QSLV2	82
2 series outlets		
	NPQM-LFK...	93
3 series outlets 360° orientable		
	QSLV3	82
4 series outlets 360° orientable		
	QSLV4	83
6 series outlets 360° orientable		
	QSLV6	83
4 series outlets 360° orientable Male thread with external hex		
	QSQ	84

T-shape

Variant	Type	Page
3 series outlets 360° orientable Male thread with external hex		
	QST3	84

3.1 Function fittings and special function connectors

Selection aid

Function fittings

Straight design

Variant	Type	Page
Push-in self-closing fitting Male thread with external hex		
	QSK	85

Straight design

Variant	Type	Page
Push-in rotary fitting 360° rotatable, Male thread with external hex		
	QSR	87

L-shape

Variant	Type	Page
Self-closing push-in L-fitting Male thread with external hex		
	QSKL	86

Special function connectors

Straight design

Variant	Type	Page
Self-closing push-in connector		
	QSK	85
Push-in bulkhead connector		
	QSSK	85

- QSM Mini
- QS Standard
- NPQM Brass (nickel-plated)
- NPQP Polypropylene
- NPKA Polymer

- QS-V0 Resistant to welding spatter
- NPQH Brass (nickel-plated)
- CRQS Stainless steel

3.1 Push-in connectors

Selection aid

Straight design

Variant	Type	Page
Push-in connector		
	QS-B	54
	QSM	61
	QS	69
	NPQM-D...	91
	NPQH-D	98
	NPQP-D...	105
	CRQS	108
	QS-V0	112
Push-in bulkhead connector		
	QSMS	61
	QSS	69
	QSS-...-F	69
	NPQM-H...	92
	NPQH-H	100
	NPQP-H...	105
	CRQSS	108
Push-in cap		
	QSMC	61
	QSC	70
Push-in connector with push-in sleeve		
	QSM-...H	62
	QS-...H	70
	NPQM-D...	91
	NPQH-D	98
	NPQP-D...	106
Push-in sleeve		
	QSH	70
	NPQM-D...	93
	NPQH-D	98
Blanking plug		
	QSMC-...H	62
	QSC-...H	70
	NPQH-P	98
	NPQP-P...	106
Plug screw		
	NPQH-BK	98

L-shape

Variant	Type	Page
Push-in L-connector		
	QSL-B	55
	QSML	64
	QSL	74
	NPQM-L...	92
	NPQH-L	99
	NPQP-L...	105
	CRQSL	109
	QSL-V0	113
with push-in sleeve		
	QSML-...H	64
	QSL-...H	74
	NPQM-L-...	92
	QSL-...HL	74

3.1 Push-in connectors

Selection aid

T-shape

Variant	Type	Page
Push-in T-connector		
	QST-B	56
	QSMT	66
	QST	76
	NPQM-T...	92
	NPQH-T	101
	NPQP-T...	105
	CRQST	109
	QST-V0	114
with push-in sleeve		
	NPQM-T...	92
Push-in T-connector		
	NPKA-T	116

W-shape

Variant	Type	Page
Push-in angled connector with push-in sleeve		
	QSW-HL	77

X-shape

Variant	Type	Page
Push-in X-connector		
	QSMX	66
	QSX	78

Y-shape

Variant	Type	Page
Push-in Y-connector		
	QSY-B	57
	QSMY	66
	QSY	79
	NPQM-Y...	92
	NPQH-Y	101
	NPQP-Y...	106
	CRQSY	110
Push-in Y-connector with push-in sleeve		
	QSY-...H	79
	QSY-...H-B	79

QSM Mini
 QS Standard
 NPQM Brass (nickel-plated)
 NPQP Polypropylene
 NPKA Polymer

QS-V0 Resistant to welding spatter
 NPQH Brass (nickel-plated)
 CRQS Stainless steel



3.1 For standard O.D. tubing

3.1.1 QS-B, Core functionality

Always reliably connected in standard applications

The standard combination with an attractive price/performance ratio. Of course the push-in fitting QS-B also offers the usual Festo quality.

Vacuum-compatible, halogen-free and always reliably connected in standard applications. This is ensured by the nickel plated brass design as well as the stainless steel retaining claw of the proven quick connection principle. The temperature resistance of 0 to +60 °C (with QS standard –10 to +80 °C), the permissible operating pressure of –0.95 to 10 bar (QS standard: –0.95 to 14 bar) and the product range of the QS-B with the 183 most popular types are designed for the core functionality. Ideal for basic pneumatic applications in combination with plastic tubing PEN.

- 183 types of QS-B fitting
- Available in mini and standard sizes
- Metric and R thread only
- Quick installation: simply plug and work
- Simple uncoupling: just press down the blue release ring to disconnect tubing

Further information

➔ www.festo.com/catalogue

3.1.1 QSM-B, mini

Core functionality

Push-in fitting

Male thread
with external hex



Type	D1	D2	Part No.
QSM-B	M3	3	132102
		4	130894
	M5	3	132103
		4	130895
		6	130896



Type	D1	D2	Part No.
QSM-B	R1/8	4	132104
		6	132105

Push-in fitting

Male thread
with internal hex



Type	D1	D2	Part No.
QSM-B- ...-I	M3	3	132116
		4	130909
	M5	3	132117
		4	130910
		6	130911
	M7	4	130912
		6	130913



Type	D1	D2	Part No.
QSM-B- B-...-I	R1/8	4	132118
		6	132119

3.1.1 QSM-B, mini Core functionality

Push-in L-fitting

360° rotatable
Male thread
with external hex



Type	D1	D2	Part No.
QSML-B	M3	3	132106
		4	130899
	M5	3	132107
		4	130900
		6	130901
	M7	4	132108
		6	132109



Type	D1	D2	Part No.
QSML-B	R $\frac{1}{8}$	4	132110
		6	132111

Push-in T-fitting

360° rotatable
Male thread
with external hex



Type	D1	D2	Part No.
QSMT-B	M3	3	132112
		4	130904
	M5	3	132113
		4	130905
		6	130906



Type	D1	D2	Part No.
QSMT-B	R $\frac{1}{8}$	4	132114
		6	132115

3.1.1 QS-B, standard Core functionality

Push-in fitting

Male thread
with external hex



Type	D1	D2	Part No.
QS-B	R $\frac{1}{8}$	4	130914
		6	130915
		8	130916
		10	132120
	R $\frac{1}{4}$	4	130917
		6	130918
		8	130919
		10	132121
		12	132122
	R $\frac{3}{8}$	6	130920
		8	130921
		10	130922
		12	132123
		16	132124
	R $\frac{1}{2}$	10	130924
		12	130925
		16	132125

Push-in fitting

Male thread
with internal hex



Type	D1	D2	Part No.
QS-B-...-I	R $\frac{1}{8}$	4	130990
		6	130991
		8	130992
		10	132151
		12	132152
	R $\frac{1}{4}$	6	130994
		8	130995
		10	132153
		12	132154
	R $\frac{3}{8}$	8	130997
		10	130998
		12	132155
	R $\frac{1}{2}$	10	132000
		12	132001

Push-in connector



Type	D1	D2	Part No.
QS-B	4	4	130964
	6	6	130965
	8	8	130966
	10	10	130967
	12	12	130968
	16	16	132144
Reducing			
QS-B	6	4	130969
	8	4	132145
		6	130970
	10	6	132146
		8	130971
	12	8	132147
		10	130972

3.1.1 QS-B, standard Core functionality

Push-in L-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSL-B	R $\frac{1}{8}$	4	130926
		6	130927
		8	130928
		10	132126
	R $\frac{1}{4}$	4	130929
		6	130930
		8	130931
		10	132127
		12	132128
	R $\frac{3}{8}$	6	130932
		8	130933
		10	130934
		12	132129
		16	132130
	R $\frac{1}{2}$	10	130936
		12	130937
		16	132131

Push-in long L-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSLL-B	R $\frac{1}{8}$	4	132002
		6	132003
		8	132004
	R $\frac{1}{4}$	4	132155
		6	132006
		8	132007
		10	132156
	R $\frac{3}{8}$	6	132008
		8	132009
		10	132010
		12	132157
	R $\frac{1}{2}$	10	132012
		12	132013

Push-in L-connector



Type	D1	Part No.
QSL-B	4	130950
	6	130951
	8	130952
	10	130953
	12	130954
	16	132138

3.1.1 QS-B, standard Core functionality

Push-in T-fitting

360° rotatable
Male thread
with external hex



Type	D1	D2	Part No.
QST-B	R $\frac{1}{8}$	4	130938
		6	130939
		8	130940
		10	132132
	R $\frac{1}{4}$	4	130941
		6	130942
		8	130943
		10	132133
		12	132134
	R $\frac{3}{8}$	6	130944
		8	130945
		10	130946
		12	132135
		16	132136
	R $\frac{1}{2}$	10	130948
		12	130949
		16	132137

Push-in T-fitting

360° rotatable
Male thread
with external hex



Type	D1	D2	Part No.
QSTL-B	R $\frac{1}{8}$	4	130978
		6	130979
		8	130980
	R $\frac{1}{4}$	4	130981
		6	130982
		8	130983
	R $\frac{3}{8}$	6	130984
		8	130985
		10	130986
		12	132149
	R $\frac{1}{2}$	10	130988
		12	130989
		16	132150

Push-in T-connector



Type	D1	Part No.
QST-B	4	130973
	6	130974
	8	130975
	10	130976
	12	130977
	16	132148

3.1.1 QS-B, standard Core functionality

Push-in Y-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSY-B	M5	4	132158
		6	132159



Type	D1	D2	Part No.
QSY-B	R ¹ / ₈	4	132014
		6	132015
		8	132016
	R ¹ / ₄	4	132017
		6	132018
		8	132019
		10	132160
	R ³ / ₈	6	132020
		8	132021
		10	132022
		12	132161
	R ¹ / ₂	10	132024
		12	132025

Push-in Y-connector



Type	D1	D2	Part No.
QSY-B	4	4	130955
	6	6	130956
	8	8	130957
	10	10	130958
	12	12	130959
	16	16	132139
Reducing			
QSY-B	6	4	130960
	8	4	132140
		6	130961
	10	6	132141
		8	130962
	12	8	132142
		10	130963
	16	12	132143





3.1 For standard O.D. tubing

3.1.2 QSM, mini and QS, standard

Individual solutions thanks to a wide range of variants

An unbeatable range of variants: the proven QS push-in fittings from Festo. Over 1,000 variants to suit the needs of your applications. In combination with the plastic tubing PUN the optimum choice for maximum flexibility in standard applications.

- From A to Z, always the fitting of your choice: over 1,000 variants
- Quick installation: simply plug and work
- Simple uncoupling: just press down the blue release ring to disconnect tubing

Further information

➔ www.festo.com/catalogue

3.1.2.1 QSM, mini

Push-in fitting

Male thread
with external hex



Type	D1	D2	Part No.
QSM	M3	2	★ 133027
		3	★ 153301
		4	★ 153303
	M5	2	★ 133028
		3	★ 153302
		4	★ 153304
		6	★ 153306
	M6	6	★ 132600

Push-in fitting

Male thread
with internal hex



Type	D1	D2	Part No.
QSM- ...-I	M3	2	★ 133026
		3	★ 153312
		4	★ 153314
	M5	3	★ 153313
		4	★ 153315
		6	★ 153317
	M7	4	★ 153319
		6	★ 153321



Type	D1	D2	Part No.
QSM	R1/8	4	★ 153305
		6	★ 153307



Type	D1	D2	Part No.
QSM- ...-I	R1/8	4	★ 153316
		6	★ 153318



Type	D1	D2	Part No.
QSM	G1/8	4	★ 186264
		6	★ 186265



Type	D1	D2	Part No.
QSM- ...-I	G1/8	4	★ 186266
		6	★ 186267

3.1.2.1 QSM, mini

Push-in fitting

Round release ring



Type	D1	D2	Part No.
QSM-...-I-R	M3	3	133001
		4	133002
	M5	3	133003
		4	133004
		6	133005
	M7	6	133007

Push-in fitting

Female thread with external hex



Type	D1	D2	Part No.
QSMF	M3	3	★ 153308
		4	★ 153310
	M5	3	★ 153309
		4	★ 153311

Push-in fitting

Male thread with internal hex



Type	D1	D2	Part No.
QSMP	M6x0.75	4	153320
	M8x0.75	6	153322

Push-in connector



Type	D1	D2	Part No.
QSM	3	3	★ 153323
	4	4	★ 153324
	6	6	★ 153325
Reducing			
QSM	3	2	★ 133029
	4	3	★ 153326
	6	4	★ 153327

Push-in bulkhead connector



Type	D1	Part No.
QSMS	3	★ 153375
	4	★ 153376
	6	★ 153377

Push-in cap



Type	D1	Part No.
QSMC	3	153381

3.1.2.1 QSM, mini

Push-in connector
with push-in sleeve



Type	D1	D2	Part No.
QSM-...H	3	2	★ 133035
	4	3	★ 153328
	6	4	★ 153329

Blanking plug



Type	D1	Part No.
QSMC- ...H	2	133036
	3	153382

3.1.2.1 QSM, mini

Push-in L-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSML	M3	2	★ 133030
		3	★ 153330
		4	★ 153332
		4	★ 153332
	M5	2	★ 133031
		3	★ 153331
		4	★ 153333
		6	★ 153335
	M7	4	★ 186352
		6	★ 186353

Push-in long L-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSMML	M3	2	★ 133032
		3	★ 153337
		4	★ 153338
		4	★ 153338
	M5	2	★ 133033
		3	★ 130838
		4	★ 153339
		6	★ 153341
	M7	4	★ 186354
		6	★ 186355



Type	D1	D2	Part No.
QSML	R1/8	4	★ 153334
		6	★ 153336



Type	D1	D2	Part No.
QSMML	R1/8	4	★ 153340
		6	★ 153342



Type	D1	D2	Part No.
QSML	G1/8	4	★ 186268
		6	★ 186269



Type	D1	D2	Part No.
QSMML	G1/8	4	★ 186270
		6	★ 186271

3.1.2.1 QSM, mini

Push-in L-fitting

360° rotatable
with internal hex



Type	D1	D2	Part No.
QSMLV- ...-I	M5	3	★ 130830
		4	★ 130831
	M7	4	★ 130832
		6	★ 130833

Push-in long L-fitting

360° rotatable
with internal hex



Type	D1	D2	Part No.
QSMLLV -...-I	M5	3	★ 130834
		4	★ 130835
	M7	4	★ 130836
		6	★ 130837

Push-in L-connector



Type	D1	Part No.
QSML	3	★ 153343
	4	★ 153344
	6	★ 153345

Push-in L-connector

with push-in sleeve



Type	D1	D2	Part No.
QSML- ...H	3	3	★ 153346
	4	4	★ 153347
	6	6	★ 153348
Reducing			
QSML- ...H	4	3	★ 153349
	6	4	★ 153350

3.1.2.1 QSM, mini

Push-in T-fitting

360° rotatable

Male thread
with external hex



Type	D1	D2	Part No.
QSMT	M3	3	★ 153351
		4	★ 153353
	M5	3	★ 153352
		4	★ 153354
		6	★ 153356

Push-in T-fitting

360° rotatable

Male thread
with external hex



Type	D1	D2	Part No.
QSMTL	M3	3	★ 153358
		4	★ 153360
	M5	3	★ 153359
		4	★ 153361
		6	★ 153363



Type	D1	D2	Part No.
QSMT	R $\frac{1}{8}$	4	★ 153355
		6	★ 153357



Type	D1	D2	Part No.
QSMTL	R $\frac{1}{8}$	4	★ 153362
		6	★ 153364



Type	D1	D2	Part No.
QSMT	G $\frac{1}{8}$	4	★ 186272
		6	★ 186273



Type	D1	D2	Part No.
QSMTL	G $\frac{1}{8}$	4	★ 186274
		6	★ 186275

3.1.2.1 QSM, mini

Push-in T-connector



Type	D1	D2	Part No.
QSMT	2	2	★ 133034
	3	3	★ 153365
	4	4	★ 153366
	6	6	★ 153367
Reducing			
QSMT	4	3	★ 153368
	6	4	★ 153369

Push-in Y-connector



Type	D1	D2	Part No.
QSMY	2	2	★ 133037
	3	3	★ 153370
	4	4	★ 153371
	6	6	★ 153372
Reducing			
QSMY	4	3	★ 153373
	6	4	★ 153374

Push-in X-connector



Type	D1	Part No.
QSMX	3	153378
	4	153379
	6	153380

3.1.2.1 QS, standard

Push-in fitting

Male thread

with external hex



Type	D1	D2	Part No.
QS	R $\frac{1}{8}$	4	★ 153001
		6	★ 153002
		8	★ 153004
		10	★ 190643
	R $\frac{1}{4}$	4	★ 190644
		6	★ 153003
		8	★ 153005
		10	★ 153007
		12	★ 164980
	R $\frac{3}{8}$	6	★ 190645
		8	★ 153006
		10	★ 153008
		12	★ 153009
		16	★ 164957
	R $\frac{1}{2}$	10	★ 190646
		12	★ 153010
		16	★ 153011



Type	D1	D2	Part No.
QS	G $\frac{1}{8}$	4	★ 186095
		6	★ 186096
		8	★ 186098
	G $\frac{1}{4}$	6	★ 186097
		8	★ 186099
		10	★ 186101
		12	★ 186350
	G $\frac{3}{8}$	8	★ 186100
		10	★ 186102
		12	★ 186103
		16	★ 186347
	G $\frac{1}{2}$	12	★ 186104
		16	★ 186105
	G $\frac{3}{4}$	22	8040613

3.1.2.1 QS, standard

Push-in fitting

Male thread
with internal hex



Type	D1	D2	Part No.
QS-...-I	R $\frac{1}{8}$	4	★ 153012
		6	★ 153013
		8	★ 153015
		10	★ 190647
	R $\frac{1}{4}$	6	★ 153014
		8	★ 153016
		10	★ 153018
		12	★ 190649
	R $\frac{3}{8}$	8	★ 153017
		10	★ 153019
		12	★ 153020
	R $\frac{1}{2}$	10	★ 190648
		12	★ 153021



Type	D1	D2	Part No.
QS-...-I	G $\frac{1}{8}$	4	★ 186106
		6	★ 186107
		8	★ 186109
		10	★ 132999
	G $\frac{1}{4}$	6	★ 186108
		8	★ 186110
		10	★ 186112
	G $\frac{3}{8}$	8	★ 186111
		10	★ 186113
		12	★ 186114
	G $\frac{1}{2}$	12	★ 186115

Push-in fitting

Female thread
with external hex



Type	D1	D2	Part No.
QSF	G $\frac{1}{8}$	4	★ 153022
		6	★ 153023
		8	★ 153025
	G $\frac{1}{4}$	4	★ 190650
		6	★ 153024
		8	★ 153026
		10	★ 153028
		12	★ 190651
	G $\frac{3}{8}$	6	★ 190652
		8	★ 153027
		10	★ 153029
		12	★ 153030
	G $\frac{1}{2}$	12	★ 190653
		16	★ 190654

Tubing, with standard O.D. → 15

3.1.2.1 QS, standard

Push-in connector



Type	D1	D2	Part No.
QS	4	4	★ 153031
	6	6	★ 153032
	8	8	★ 153033
	10	10	★ 153034
	12	12	★ 153035
	16	16	★ 153036
Reducing			
QS	6	4	★ 153037
		8	★ 130606
	10	6	★ 153038
		8	★ 130607
	12	8	★ 153039
		10	★ 130608
	16	10	★ 153040
		12	★ 153041

Push-in bulkhead connector



Type	D1	Part No.
QSS	4	★ 153157
	6	★ 153158
	8	★ 153159
	10	★ 153160
	12	★ 153161

Push-in bulkhead connector with fixed collar



Type	D1	Part No.
QSS-...-F	4	193950
	6	193951
	8	★ 130642
	10	★ 130643
	12	★ 130644

Push-in bulkhead fitting with female thread



Type	D1	D2	Part No.
QSSF	G1/8	4	153162
		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	12	153171
		16	190657

3.1.2.1 QS, standard

Push-in cap



Type	D1	Part No.
QSC	4	153262
	6	153263
	8	153264
	10	153265
	12	153266

Push-in connector with push-in sleeve



Type	D1	D2	Part No.
QS-...H	4	6	★ 153041
		8	★ 130622
	6	8	★ 153042
		10	★ 130623
		12	★ 132981
	8	10	★ 153043
		12	★ 130624
	10	12	★ 153044

Push-in sleeve



Type	D1	Part No.
QSH	4	153251
	6	153252
	8	153253
	10	153254
	12	153255
	16	153256

Push-in sleeve

Reducing



Type	D1	D2	Part No.
QSH	6	4	153257
	8	4	130625
		6	153258
	10	6	130626
		8	153259
	12	8	130627
		10	153260
	16	12	153261

Blanking plug



Type	D1	Part No.
QSC-...H	4	153267
	6	153268
	8	153269
	10	153270
	12	153271
	16	153272

3.1.2.1 QS, standard

Push-in L-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSL	R $\frac{1}{8}$	4	★ 153045
		6	★ 153046
		8	★ 153048
		10	★ 190658
	R $\frac{1}{4}$	4	★ 190659
		6	★ 153047
		8	★ 153049
		10	★ 153051
		12	★ 164981
	R $\frac{3}{8}$	6	★ 190660
		8	★ 153050
		10	★ 153052
		12	★ 153053
		16	★ 164958
	R $\frac{1}{2}$	10	★ 190661
		12	★ 153054
		16	★ 153055



Type	D1	D2	Part No.
QSL	G $\frac{1}{8}$	4	★ 186116
		6	★ 186117
		8	★ 186119
	G $\frac{1}{4}$	6	★ 186118
		8	★ 186120
		10	★ 186122
		12	★ 186351
	G $\frac{3}{8}$	8	★ 186121
		10	★ 186123
		12	★ 186124
		16	★ 186348
	G $\frac{1}{2}$	12	★ 186125
		16	★ 186126

3.1.2.1 QS, standard

Push-in long L-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSL	R $\frac{1}{8}$	4	★ 153076
		6	★ 153077
		8	★ 153079
	R $\frac{1}{4}$	4	★ 190662
		6	★ 153078
		8	★ 153080
		10	★ 153082
	R $\frac{3}{8}$	6	★ 190663
		8	★ 153081
		10	★ 153083
		12	★ 153084
	R $\frac{1}{2}$	10	★ 190664
		12	★ 153085

Push-in L-fitting

Female thread

with external hex



Type	D1	D2	Part No.
QSLF	G $\frac{1}{8}$	4	★ 153273
		6	★ 153274
		8	★ 153276
	G $\frac{1}{4}$	6	★ 153275
		8	★ 153277
		10	★ 153279
	G $\frac{3}{8}$	8	★ 153278
		10	★ 153280



Type	D1	D2	Part No.
QSL	G $\frac{1}{8}$	4	★ 186127
		6	★ 186128
		8	★ 186130
	G $\frac{1}{4}$	6	★ 186129
		8	★ 186131
		10	★ 186133
		12	★ 132596
	G $\frac{3}{8}$	8	★ 186132
		10	★ 186134
		12	★ 186135
	G $\frac{1}{2}$	12	★ 186136
		16	★ 190665

Tubing, with standard O.D. → 15

3.1.2.1 QS, standard

Push-in L-fitting

360° rotatable

Male thread

with internal hex



Type	D1	D2	Part No.
QSLV-...-I	R1/8	6	★ 153097
		8	★ 153099
	R1/4	6	★ 153098
		8	★ 153100
		10	★ 153102
	R3/8	8	★ 153101
		10	★ 153103
		12	★ 153104
	R1/2	12	★ 153105



Type	D1	D2	Part No.
QSLV-...-I	G1/8	6	★ 186148
		8	★ 186150
	G1/4	6	★ 186149
		8	★ 186151
		10	★ 186153
	G3/8	8	★ 186152
		10	★ 186154
		12	★ 186155
	G1/2	12	★ 186156

Push-in L-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSLV	M5	6	★ 190666



Type	D1	D2	Part No.
QSLV	R1/8	4	★ 153086
		6	★ 153087
		8	★ 153089
	R1/4	6	★ 153088
		8	★ 153090
		10	★ 153092
	R3/8	8	★ 153091
		10	★ 153093
		12	★ 153094
	R1/2	12	★ 153095
		12	★ 153096

3.1.2.1 QS, standard

Push-in L-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSLV	G1/8	4	★ 186137
		6	★ 186138
		8	★ 186140
	G1/4	6	★ 186139
		8	★ 186141
		10	★ 186143
	G3/8	8	★ 186142
		10	★ 186144
		12	★ 186145
	G1/2	12	★ 186146
		16	★ 186147

Push-in L-connector



Type	D1	Part No.
QSL	6	★ 153070
	8	★ 153071
	10	★ 153072
	12	★ 153073
	14	★ 153074
	16	★ 153075

Push-in L-connector

with push-in sleeve



Type	D1	D2	Part No.
QSL-...H	4	4	★ 153056
	6	6	★ 153057
	8	8	★ 153058
	10	10	★ 153059
	12	12	★ 153060
Reducing			
QSL-...H	6	4	★ 153061
	6	6	★ 153062
	8	8	★ 153063
	10	10	★ 153064

Push-in L-connector

with long push-in sleeve



Type	D1	D2	Part No.
QSL-...HL	4	4	★ 153065
	6	6	★ 153066
	8	8	★ 153067
	10	10	★ 153068
	12	12	★ 153069

3.1.2.1 QS, standard

Push-in T-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QST	R $\frac{1}{8}$	4	★ 153106
		6	★ 153107
		8	★ 153109
		10	★ 190667
	R $\frac{1}{4}$	4	★ 190668
		6	★ 153108
		8	★ 153110
		10	★ 153112
		12	★ 190669
	R $\frac{3}{8}$	6	★ 190670
		8	★ 153111
		10	★ 153113
		12	★ 153114
		16	★ 164959
	R $\frac{1}{2}$	10	★ 190672
		12	★ 153115
		16	★ 153116



Type	D1	D2	Part No.
QST	G $\frac{1}{8}$	4	★ 186157
		6	★ 186158
		8	★ 186160
	G $\frac{1}{4}$	6	★ 186159
		8	★ 186161
		10	★ 186163
		12	★ 132597
	G $\frac{3}{8}$	8	★ 186162
		10	★ 186164
		12	★ 186165
		16	★ 186349
	G $\frac{1}{2}$	12	★ 186166
		16	★ 186167

3.1.2.1 QS, standard

Push-in T-connector



Type	D1	D2	Part No.
QST	4	4	★ 153128
	6	6	★ 153129
	8	8	★ 153130
	10	10	★ 153131
	12	12	★ 153132
	16	16	★ 153133
Reducing			
QST	6	4	★ 153134
	8	4	★ 130613
		6	★ 153135
	10	6	★ 130614
		8	★ 153136
	12	8	★ 130615
		10	★ 153137
	16	12	★ 130616

Push-in T-fitting

360° rotatable
with male and female thread



Type	D1	D2	Part No.
QSTF	R $\frac{1}{8}$	4	★ 153182
		6	★ 153183
		8	★ 153185
	R $\frac{1}{4}$	6	★ 153184
		8	★ 153186
		10	★ 153188
	R $\frac{3}{8}$	8	★ 153187
		10	★ 153189
		12	★ 153190
	R $\frac{1}{2}$	12	★ 153191



Type	D1	D2	Part No.
QSTF	G $\frac{1}{8}$	4	★ 186199
		6	★ 186200
		8	★ 186202
	G $\frac{1}{4}$	6	★ 186201
		8	★ 186203
		10	★ 186205
	G $\frac{3}{8}$	8	★ 186204
		10	★ 186206
		12	★ 186207
	G $\frac{1}{2}$	12	★ 186208

3.1.2.1 QS, standard

Push-in T-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSTL	R $\frac{1}{8}$	4	★ 153117
		6	★ 153118
		8	★ 153120
	R $\frac{1}{4}$	6	★ 153119
		8	★ 153121
		10	★ 153123
	R $\frac{3}{8}$	8	★ 153122
		10	★ 153124
		12	★ 153125
	R $\frac{1}{2}$	12	★ 153126
		16	★ 153127

Push-in angled fitting

360° rotatable

Male thread



Type	D1	D2	Part No.
QSW	R $\frac{1}{8}$	4	★ 130596
		6	★ 130597
		8	★ 130598
	R $\frac{1}{4}$	6	★ 130599
		8	★ 130600
		10	★ 130601
	R $\frac{3}{8}$	8	★ 130602
		10	★ 130603
	R $\frac{1}{2}$	12	★ 130604
		16	★ 130605



Type	D1	D2	Part No.
QSTL	G $\frac{1}{8}$	4	★ 186168
		6	★ 186169
		8	★ 186171
	G $\frac{1}{4}$	6	★ 186170
		8	★ 186172
		10	★ 186174
	G $\frac{3}{8}$	8	★ 186173
		10	★ 186175
		12	★ 186176
	G $\frac{1}{2}$	12	★ 186177
		16	★ 186178

Push-in angled connector

with push-in sleeve



Type	D1	D2	Part No.
QSW-... HL	4	4	★ 130617
	6	6	★ 130618
	8	8	★ 130619
	10	10	★ 130620
	12	12	★ 130621

3.1.2.1 QS, standard

Push-in X-connector



Type	D1	Part No.
QSX	8	153285
	10	153286
	12	153287

Push-in Y-fitting

360° rotatable
Male thread
with external hex



Type	D1	D2	Part No.
QSY	M5	4	★ 190673
		6	★ 190674



Type	D1	D2	Part No.
QSY	R $\frac{1}{8}$	4	★ 153138
		6	★ 153139
		8	★ 153141
	R $\frac{1}{4}$	4	★ 190675
		6	★ 153140
		8	★ 153142
		10	★ 153144
	R $\frac{3}{8}$	8	★ 153143
		10	★ 153145
		12	★ 153146
	R $\frac{1}{2}$	12	★ 153147

Push-in Y-fitting

360° rotatable
Male thread
with external hex



Type	D1	D2	Part No.
QSY	G $\frac{1}{8}$	4	★ 186179
		6	★ 186180
		8	★ 186182
	G $\frac{1}{4}$	6	★ 186181
		8	★ 186183
		10	★ 186185
	G $\frac{3}{8}$	8	★ 186184
		10	★ 186186
		12	★ 186187
	G $\frac{1}{2}$	12	★ 186188

3.1.2.1 QS, standard

Push-in Y-connector



Type	D1	D2	Part No.
QSY	4	4	★ 153148
	6	6	★ 153149
	8	8	★ 153150
	10	10	★ 153151
	12	12	★ 153152
	16	16	★ 130609
Reducing			
QSY	6	4	★ 153153
	8	4	★ 130610
		6	★ 153154
	10	6	★ 130611
		8	★ 153155
	12	8	★ 130612
		10	★ 153156
	16	12	★ 190708

Push-in Y-connector with push-in sleeve



Type	D1	D2	Part No.
QSY-...H	4	4	★ 130628
QSY-...H -B	6	6	★ 133145
	8	8	★ 133146
	10	10	★ 133148
	12	12	★ 133150
Reducing			
QSY-...H	6	4	★ 130633
QSY-...H -B	8	6	★ 133147
	10	8	★ 133149
	12	10	★ 133151

3.1.2.1 QS, standard

Push-in Y-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSYL	R $\frac{1}{8}$	4	★ 153172
		6	★ 153173
		8	★ 153175
		10	★ 153178
	R $\frac{1}{4}$	6	★ 153174
		8	★ 153176
		10	★ 153178
	R $\frac{3}{8}$	8	★ 153177
		10	★ 153179
		12	★ 153180
	R $\frac{1}{2}$	12	★ 153181



Type	D1	D2	Part No.
QSYL	G $\frac{1}{8}$	4	★ 186189
		6	★ 186190
		8	★ 186192
	G $\frac{1}{4}$	6	★ 186191
		8	★ 186193
		10	★ 186195
	G $\frac{3}{8}$	8	★ 186194
		10	★ 186196
		12	★ 186197
	G $\frac{1}{2}$	12	★ 186198

Push-in Y-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSYLV	R $\frac{1}{8}$	6	★ 153192
	R $\frac{1}{4}$	8	★ 153193
	R $\frac{3}{8}$	10	★ 153194
	R $\frac{1}{2}$	12	★ 153195



Type	D1	D2	Part No.
QSYLV	G $\frac{1}{8}$	6	★ 186209
	G $\frac{1}{4}$	8	★ 186210
	G $\frac{3}{8}$	10	★ 186211
	G $\frac{1}{2}$	12	★ 186212

3.1.2.1 QS, standard

Push-in Y-fitting

Male and female thread
with external hex



Type	D1	D2	Part No.
QSYTF	R $\frac{1}{8}$	6	153196
	R $\frac{1}{4}$	8	153197
	R $\frac{3}{8}$	10	153198
	R $\frac{1}{2}$	12	153199



Type	D1	D2	Part No.
QSYTF	G $\frac{1}{8}$	6	186213
	G $\frac{1}{4}$	8	186214
	G $\frac{3}{8}$	10	186215
	G $\frac{1}{2}$	12	186216

3.1.2.2 QSLV, multiple distributor

Multiple distributor

2 series outlets

360° rotatable



Type	D1	D2	Part No.
QSLV2	R $\frac{1}{8}$	4	153211
		6	153212
		8	153214
	R $\frac{1}{4}$	6	153213
		8	153215
		10	153217
	R $\frac{3}{8}$	8	153216
		10	153218
		12	153219
	R $\frac{1}{2}$	12	153220

Multiple distributor

3 series outlets

360° rotatable



Type	D1	D2	Part No.
QSLV3	R $\frac{1}{8}$	4	153221
		6	153222
		8	153224
	R $\frac{1}{4}$	6	153223
		8	153225
		10	153227
	R $\frac{3}{8}$	8	153226
		10	153228
		12	153229
	R $\frac{1}{2}$	12	153230



Type	D1	D2	Part No.
QSLV2	G $\frac{1}{8}$	4	186223
		6	186224
		8	186226
	G $\frac{1}{4}$	6	186225
		8	186227
		10	186229
	G $\frac{3}{8}$	8	186228
		10	186230
		12	186231
	G $\frac{1}{2}$	12	186232



Type	D1	D2	Part No.
QSLV3	G $\frac{1}{8}$	4	186233
		6	186234
		8	186236
	G $\frac{1}{4}$	6	186235
		8	186237
		10	186239
	G $\frac{3}{8}$	8	186238
		10	186240
		12	186241
	G $\frac{1}{2}$	12	186242

Tubing, with standard O.D. → 15

3.1.2.2 QSLV, multiple distributor

Multiple distributor

4 parallel outlets

360° rotatable



Type	D1	D2	Part No.
QSLV4	R $\frac{1}{8}$	4	153231
		6	153232
		8	153234
	R $\frac{1}{4}$	6	153233
		8	153235
		10	153237
	R $\frac{3}{8}$	8	153236
		10	153238
		12	153239
	R $\frac{1}{2}$	12	153240

Multiple distributor

6 parallel outlets

360° rotatable



Type	D1	D2	Part No.
QSLV6	R $\frac{1}{8}$	4	153241
		6	153242
		8	153244
	R $\frac{1}{4}$	6	153243
		8	153245
		10	153247
	R $\frac{3}{8}$	8	153246
		10	153248
		12	153249
	R $\frac{1}{2}$	12	153250



Type	D1	D2	Part No.
QSLV4	G $\frac{1}{8}$	4	186243
		6	186244
		8	186246
	G $\frac{1}{4}$	6	186245
		8	186247
		10	186249
	G $\frac{3}{8}$	8	186248
		10	186250
		12	186251
	G $\frac{1}{2}$	12	186252



Type	D1	D2	Part No.
QSLV6	G $\frac{1}{8}$	4	186253
		6	186254
		8	186256
	G $\frac{1}{4}$	6	186255
		8	186257
		10	186259
	G $\frac{3}{8}$	8	186258
		10	186260
		12	186261
	G $\frac{1}{2}$	12	186262

3.1.2.2 QSQ/QST3, multiple distributor

Multiple distributor

360° rotatable

Male thread

with external hex

4 parallel outlets



Type	D1	D2	Part No.
QSQ	R $\frac{1}{8}$	4	153206
		6	153208
	R $\frac{1}{4}$	4	153207
		6	153288



Type	D1	D2	Part No.
QSQ	G $\frac{1}{8}$	4	186220
		6	186222
	G $\frac{1}{4}$	4	186221
		6	186263

Push-in connector

360° rotatable

4 parallel outlets, reducing



Type	D1	D2	Part No.
QSQ	6	4	153209
	8	6	153210

Multiple distributor

360° rotatable

Male thread

with external hex

3 series outlets



Type	D1	D2	Part No.
QST3	R $\frac{1}{8}$	6	153200
	R $\frac{1}{4}$	8	153201
	R $\frac{3}{8}$	10	153202



Type	D1	D2	Part No.
QST3	G $\frac{1}{8}$	6	186217
	G $\frac{1}{4}$	8	186218
	G $\frac{3}{8}$	10	186219

Push-in connector

360° rotatable

4 series outlets, reducing



Type	D1	D2	Part No.
QST3	6	4	153203
	8	6	153204
	10	8	153205

3.1.2.3 QSK, push-in self-closing fittings

Push-in self-closing fitting

Male thread

with external hex



Type	D1	D2	Part No.
QSK	M5	4	153291
		6	153292



Type	D1	D2	Part No.
QSK	R ¹ / ₈	4	153419
		6	153420
		8	153422
	R ¹ / ₄	6	153421
		8	153423
		10	153425
	R ³ / ₈	8	153424
		10	153426
		12	153427
	R ¹ / ₂	12	153428



Type	D1	D2	Part No.
QSK	G ¹ / ₈	4	186294
		6	186295
		8	186297
	G ¹ / ₄	6	186296
		8	186298
		10	186300
	G ³ / ₈	8	186299
		10	186301
		12	186302
	G ¹ / ₂	12	186303

Self-closing push-in connector



Type	D1	Part No.
QSK	4	153439
	6	153440
	8	153441
	10	153442
	12	153443

Push-in bulkhead connector



Type	D1	Part No.
QSSK	4	★ 130637
	6	★ 130638
	8	★ 130639
	10	★ 130640
	12	★ 130641

3.1.2.3 QSK, push-in self-closing fittings

Self-closing push-in L-fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSKL	M5	4	153294
		6	153295



Type	D1	D2	Part No.
QSKL	R $\frac{1}{8}$	4	153429
		6	153430
		8	153432
	R $\frac{1}{4}$	6	153431
		8	153433
		10	153435
	R $\frac{3}{8}$	8	153434
		10	153436
		12	153437
	R $\frac{1}{2}$	12	153438



Type	D1	D2	Part No.
QSKL	G $\frac{1}{8}$	4	186304
		6	186305
		8	186307
	G $\frac{1}{4}$	6	186306
		8	186308
		10	186310
	G $\frac{3}{8}$	8	186309
		10	186311
		12	186312
	G $\frac{1}{2}$	12	186313

Tubing, with standard O.D. → 15

3.1.2.3 QSR, push-in rotary fittings

Push-in rotary fitting

360° rotatable

Male thread

with external hex



Type	D1	D2	Part No.
QSR	M5	4	153526
		6	153527

Rotary push-in L-fitting

360° rotatable, with ball bearing

Male thread

with external hex



Type	D1	D2	Part No.
QSRL	M5	4	153529
		6	153530



Type	D1	D2	Part No.
QSR	R $\frac{1}{8}$	4	153401
		6	153402
		8	153404
	R $\frac{1}{4}$	6	153403
		8	153405
	R $\frac{3}{8}$	8	153406
		10	153407
		12	153408
	R $\frac{1}{2}$	12	153409



Type	D1	D2	Part No.
QSRL	R $\frac{1}{8}$	4	153410
		6	153411
		8	153413
	R $\frac{1}{4}$	6	153412
		8	153414
	R $\frac{3}{8}$	8	153415
		10	153416
		12	153417
	R $\frac{1}{2}$	12	153418



Type	D1	D2	Part No.
QSR	G $\frac{1}{8}$	4	186276
		6	186277
		8	186279
	G $\frac{1}{4}$	6	186278
		8	186280
	G $\frac{3}{8}$	8	186281
		10	186282
		12	186283
	G $\frac{1}{2}$	12	186284



Type	D1	D2	Part No.
QSRL	G $\frac{1}{8}$	4	186285
		6	186286
		8	186288
	G $\frac{1}{4}$	6	186287
		8	186289
	G $\frac{3}{8}$	8	186290
		10	186291
		12	186292
	G $\frac{1}{2}$	12	186293

Tubing, with standard O.D. ➔ 15





3.1 For standard O.D. tubing

3.1.3 NPQM Brass (nickel-plated)

Sturdy and with high load bearing capacity, not only in the automotive industry

The sold-metal fitting NPQM is characterised by its sturdiness and high load bearing capacity. Optimum connection with the electrically conductive tubing PUN-CM for dissipating possible electric charges.

- Housing and release ring: Nickel-plated brass
- Operating pressure: –0.95 to 16 bar
- Antistatic in combination with PUN-CM
- Flame-retardant in combination with PUN-V0

3.1.3 NPQM Brass (nickel-plated)

Push-in fitting

Male thread
with internal hex



Type	D1	D2	Part No.
NPQM-DK...	M5	4	558657
		6	558658
	M7	4	558659
		6	558660

Push-in fitting

Male thread
with external hex



Type	D1	D2	Part No.
NPQM-D...	G ¹ / ₈	4	558661
		6	558662
		8	558663
	G ¹ / ₄	6	558664
		8	558665
		10	558666
		12	558667
	G ³ / ₈	8	558668
		10	558669
		12	558670
		14	570450
	G ¹ / ₂	10	558671
		12	558672
		14	570451

Push-in fitting

Female thread
with external hex



Type	D1	D2	Part No.
NPQM-D...	G ¹ / ₈	4	558674
		6	558675
		8	558676
	G ¹ / ₄	6	558678
		8	558679
		10	558680

Push-in L-fitting

Male thread
with external hex



Type	D1	D2	Part No.
NPQM-L...	M5	4	558704
		6	558705

Type	D1	D2	Part No.
NPQM-L...	G ¹ / ₈	4	558708
		6	558709
		8	558710
	G ¹ / ₄	6	558711
		8	558712
		10	558713
		12	558714
	G ³ / ₈	8	558715
		10	558716
		12	558717
		14	570460
	G ¹ / ₂	10	558718
		12	558719
		14	570461

3.1.3 NPQM Brass (nickel-plated)

Push-in T-fitting

Male thread
with external hex



Type	D1	D2	Part No.
NPQM-T...	G $\frac{1}{8}$	4	558736
		6	558737
		8	558738
	G $\frac{1}{4}$	6	558739
		8	558740
		10	558741
		12	558742
	G $\frac{3}{8}$	8	558743
		10	558744
		12	558745
	G $\frac{1}{2}$	12	558747

Push-in connector

with push-in sleeve



Type	D1	D2	Part No.
NPQM-D...	6	4	558765
	8		558766
	4	6	558767
	8		558768
	10		558769
	12		558770
	14		570457
	6	8	558771
	10		558772
	12		558773
	14		570458
	12	10	558774
	14		570456
	14	12	570459

Push-in connector



Type	D1	D2	Part No.
NPQM-D...	4	4	558760
	6	6	558761
	8	8	558762
	10	10	558763
	12	12	558764
	14	14	570452

3.1.3 NPQM Brass (nickel-plated)

Push-in L-connector



Type	D1	D2	Part No.
NPQM-L...	4	4	558776
	6	6	558777
	8	8	558778
	10	10	558779
	12	12	558780
	14	14	570453

Push-in L-connector with push-in sleeve



Type	D1	D2	Part No.
NPQM-L...	4	4	558781
	6	6	558782
	8	8	558783
	10	10	558784

Push-in T-connector



Type	D1	D2	Part No.
NPQM-T...	4	4	558786
	6	6	558787
	8	8	558788
	10	10	558789
	12	12	558790
	14	14	570454

Push-in T-connector with push-in sleeve



Type	D1	D2	Part No.
NPQM-T...	4	4	558791
	6	6	558792
	8	8	558793
	10	10	558794

Push-in Y-connector



Type	D1	D2	Part No.
NPQM-Y...	4	4	558798
	6	6	558799
	8	8	558800
	10	10	558801
	12	12	558802

Reducing

NPQM-Y...	6	4	558803
	8	6	558804
	10	8	558805

Push-in bulkhead connector



Type	D2	Part No.
NPQM-H...	4	558806
	6	558807
	8	558808
	10	558809
	12	558810

3.1.3 NPQM Brass (nickel-plated)

Push-in sleeve



Type	D1	Part No.
NPQM-D...	4	558811
	6	558812
	8	558813
	10	558814
	12	558815
	14	570455

Push-in L-fitting

Male thread
with internal hex



Type	D1	D2	Part No.
NPQM-LK...	M5	3	558816
		4	558817

Type	D1	D2	Part No.
NPQM-LK...	G $\frac{1}{8}$	4	558818
		6	558819
		8	558820
	G $\frac{1}{4}$	6	558821
		8	558822
		10	558823
	G $\frac{3}{8}$	10	558825

Push-in L-fitting

Male thread
with external hex



Type	D1	D2	Part No.
NPQM-LH...	M5	4	558827
		6	558828

Type	D1	D2	Part No.
NPQM-LH...	G $\frac{1}{8}$	4	558829
		6	558830
		8	558831
	G $\frac{1}{4}$	6	558832
		8	558833
	G $\frac{3}{8}$	8	558834
		10	558835
		12	558836

Multiple distributor

2-way



Type	D1	D2	Part No.
NPQM-LFK...	G $\frac{1}{8}$	4	558837
		6	558838
		8	558839
	G $\frac{1}{4}$	6	558840
		8	558841





3.1 For standard O.D. tubing

3.1.4 NPQH Brass (nickel-plated)

The all-metal fitting NPQH – the economical solution for sensitive applications

More robust, resistant to high temperatures, systematically easier to clean thanks to enhanced corrosion protection as well as suitable for the food industry. In combination with the high temperature-resistant, German Technical Control Board (TÜV) tested tubing PFAN, the push-in fitting NPQH can withstand temperatures up to 150 °C at operating pressures of up to 20 bar. With 100 new NPQH types, the range offers a wide choice for every user.

- Sturdy push-in fitting in all-metal design
- Temperature resistant to 150 °C at up to 20 bar
- Highly resistant to corrosion and cleaning agents thanks to electroless nickel plating

Further information

➔ www.festo.com/catalogue

3.1.4 NPQH Brass (nickel-plated)

Push-in fitting

Male thread
with external hex



Type	D1	D2	Part No.
NPQH-D	M5	4	578334
		6	578335
	M7	4	578336
		6	578337

Push-in fitting

Male thread
with internal hex



Type	D1	D2	Part No.
NPQH-DK	M5	4	578370
		6	578371
	M7	4	578372
		6	578373

Type	D1	D2	Part No.
NPQH-D	G $\frac{1}{8}$	4	578338
		6	578339
		8	578340
	G $\frac{1}{4}$	6	578341
		8	578342
		10	578343
		12	578344
	G $\frac{3}{8}$	8	578345
		10	578346
		12	578347
		14	578348
		10	578349
		12	578350
		14	578351

Type	D1	D2	Part No.
NPQH-DK	G $\frac{1}{8}$	4	578374
		6	578375
		8	578376
	G $\frac{1}{4}$	8	578377
		10	578378
	G $\frac{3}{8}$	12	578379

3.1.4 NPQH Brass (nickel-plated)

Push-in fitting

Female thread
with external hex



Type	D1	D2	Part No.
NPQH-D	G $\frac{1}{8}$	4	578352
		6	578353
		8	578354
	G $\frac{1}{4}$	4	578355
		6	578356
		8	578357

Push-in bulkhead fitting

Female thread
with external hex



Type	D1	D2	Part No.
NPQH-H	G $\frac{1}{8}$	4	578294
		6	578295
		8	578296
	G $\frac{1}{4}$	6	578297
		8	578298

Push-in fitting

Male thread
with push-in sleeve



Type	D1	D2	Part No.
NPQH-DK	M5	4	578358
		6	578359

Type	D1	D2	Part No.
NPQH-DK	G $\frac{1}{8}$	4	578360
		6	578361
		8	578362
	G $\frac{1}{4}$	6	578363
		8	578364
		10	578365
		12	578366
	G $\frac{3}{8}$	10	578367
		12	578368
	G $\frac{1}{2}$	12	578369

3.1.4 NPQH Brass (nickel-plated)

Push-in connector



Type	D1	D2	Part No.
NPQH-D	4	4	578323
	6	6	578324
	8	8	578325
	10	10	578326
	12	12	578327
	14	14	578328
Reducing			
NPQH-D	6	4	578329
	8	6	578330
	12	8	578331
	14	10	578332
		12	578333

Push-in connector with push-in sleeve



Type	D1	D2	Part No.
NPQH-D	4	6	578304
		8	578305
		10	578307
	6	8	578306
		10	578308
		12	578310
		14	578313
	8	10	578309
		12	578311
		14	578314
	10	12	578312
		14	578315
	12	14	578316

Push-in sleeve



Type	D1	D2	Part No.
NPQH-D	4	4	578317
	6	6	578318
	8	8	578319
	10	10	578320
	12	12	578321
	14	14	578322

Blanking plug



Type	D1	Part No.
NPQH-P	4	578257
	6	578258
	8	578259
	10	578260
	12	578261
	14	578262

Plug screw



Type	D1	Part No.
NPQH-BK	M5	578404
	M7	578405

Type	D1	Part No.
NPQH-BK	G1/8	578406
	G1/4	578407
	G3/8	578408
	G1/2	578409

3.1.4 NPQH Brass (nickel-plated)

Push-in L-fitting

360° orientable
Male thread
with external hex



Type	D1	D2	Part No.
NPQH-L	M5	4	578276
		6	578277
		8	578278
	M7	4	578278
		6	578279
		8	578280

Type	D1	D2	Part No.
NPQH-L	G ¹ / ₈	4	578280
		6	578281
		8	578282
	G ¹ / ₄	6	578283
		8	578284
		10	578285
		12	578286
	G ³ / ₈	8	578287
		10	578288
		12	578289
		14	578290
	G ¹ / ₂	10	578291
		12	578292
		14	578293

Push-in L-connector



Type	D1	D2	Part No.
NPQH-L	4	4	578270
	6	6	578271
	8	8	578272
	10	10	578273
	12	12	578274
	14	14	578275

Push-in long L-fitting

360° orientable
Male thread
with external hex



Type	D1	D2	Part No.
NPQH-LL	G ¹ / ₈	4	578263
		6	578264
		8	578265
	G ¹ / ₄	6	578266
		8	578267
		10	578268
	G ³ / ₈	10	578269

3.1.4 NPQH Brass (nickel-plated)

Push-in bulkhead connector



Type	D1	D2	Part No.
NPQH-H	4	4	578299
	6	6	578300
	8	8	578301
	10	10	578302
	12	12	578303

Push-in T-fitting

360° orientable
Male thread
with external hex



Type	D1	D2	Part No.
NPQH-T	M5	4	578390
		6	578391

Type	D1	D2	Part No.
NPQH-T	G ¹ / ₈	4	578392
		6	578393
		8	578394
	G ¹ / ₄	6	578395
		8	578396
		10	578397
		12	578398
	G ³ / ₈	8	578399
		10	578400
		12	578401
	G ¹ / ₂	10	578402
		12	578403

3.1.4 NPQH Brass (nickel-plated)

Push-in T-connector



Type	D1	D2	Part No.
NPQH-T	4	4	578380
	6	6	578381
	8	8	578382
	10	10	578383
	12	12	578384
	14	14	578385
Reducing			
NPQH-T	6	4	578386
	8	6	578387
	10	8	578388
	12	10	578389

Push-in Y-connector



Type	D1	D2	Part No.
NPQH-Y	6	6	578410
	8	8	578411
	10	10	578412
Reducing			
NPQH-Y	6	4	578413
	8	6	578414
	10	8	578415





3.1 For standard O.D. tubing

3.1.5 NPQP Polypropylene

Cost-effective alternatives for areas requiring thorough cleaning

Its high corrosion resistance and resistance to chemicals makes the NPQP an effective alternative to expensive stainless steel fittings. It also offers error-free operation even in areas requiring thorough cleaning.

- Housing and release ring: Polypropylene
- Error-free operation even in areas requiring thorough cleaning
- Operating temperature: –20 to +60 °C
- Operating pressure: –0.95 to +10 bar

3.1.5 NPQP Polypropylene

Push-in fitting

Male thread
with external hex



Type	D1	D2	Part No.
NPQP-D...	R $\frac{1}{8}$	4	133041
		6	133043
		8	133045
	R $\frac{1}{4}$	4	133042
		6	133044
		8	133046
		10	133047
	R $\frac{3}{8}$	10	133048
		12	133049
	R $\frac{1}{2}$	12	133050

Push-in L-fitting

Male thread
with external hex



Type	D1	D2	Part No.
NPQP-LQ...	R $\frac{1}{8}$	4	133061
		6	133063
		8	133065
	R $\frac{1}{4}$	4	133062
		6	133064
		8	133066
		10	133067
	R $\frac{3}{8}$	10	133068
		12	133069
	R $\frac{1}{2}$	12	133070

Push-in L-fitting

Male thread
with external hex



Type	D1	D2	Part No.
NPQP-L...	R $\frac{1}{8}$	4	133051
		6	133053
		8	133055
	R $\frac{1}{4}$	4	133052
		6	133054
		8	133056
		10	133057
	R $\frac{3}{8}$	10	133058
		12	133059
	R $\frac{1}{2}$	12	133060

Push-in T-fitting

Male thread
with external hex



Type	D1	D2	Part No.
NPQP-T...	R $\frac{1}{8}$	4	133071
		6	133073
		8	133075
	R $\frac{1}{4}$	4	133072
		6	133074
		8	133076
		10	133077
	R $\frac{3}{8}$	10	133078
		12	133079
	R $\frac{1}{2}$	12	133080

3.1.5 NPQP Polypropylene

Push-in Y-fitting

Male thread
with external hex



Type	D1	D2	Part No.
NPQP-Y...	R1/8	4	133081
		6	133083
		8	133085
	R1/4	4	133082
		6	133084
		8	133086
		10	133087
	R3/8	10	133088
		12	133089
	R1/2	12	133090

Push-in connector



Type	D1	D2	Part No.
NPQP-D...	4	4	133091
	6	6	133092
	8	8	133093
	10	10	133094
	12	12	133095
reducing			
NPQP-D...	6	4	133096
	8	6	133097
	10	8	133098
	12	10	133099

Push-in bulkhead connector



Type	D2	Part No.
NPQP-H...	4	133100
	6	133101
	8	133102
	10	133103
	12	133104

Push-in L-connector



Type	D1	D2	Part No.
NPQP-L...	4	4	133105
	6	6	133106
	8	8	133107
	10	10	133108
	12	12	133109

Push-in T-connector



Type	D1	D2	Part No.
NPQP-T...	4	4	133110
	6	6	133111
	8	8	133112
	10	10	133113
	12	12	133114
reducing			
NPQP-T...	6	4	133115
	8	6	133116
	10	8	133117
	12	10	133118

3.1.5 NPQP Polypropylene

Push-in Y-connector



Type	D1	D2	Part No.
NPQP-Y...	4	4	133119
	6	6	133120
	8	8	133121
	10	10	133122
	12	12	133123
reducing			
NPQP-Y...	6	4	133124
	8	6	133125
	10	8	133126
	12	10	133127

Push-in connector with push-in sleeve



Type	D1	D2	Part No.
NPQP-D...	6	4	133133
	8	4	133134
	8	6	133135
	10	6	133136
	10	8	133137
	12	8	133138
	12	10	133139

Blanking plug



Type	D1	Part No.
NPQP-P...	4	133128
	6	133129
	8	133130
	10	133131
	12	133132



3.1 For standard O.D. tubing

3.1.6 CRQS Stainless steel

Holds firm in conditions that other fittings fail to meet.

Maximum corrosion protection means being at home in the food processing and packaging industries. In combination with the tubing PFAN, the fitting CRQS is particularly suited to use in the most aggressive media such as acids and alkalies.

- For demanding applications in aggressive environmental conditions
- Maximum corrosion resistance
- Temperature range –15 to +120 °C
- 70 different types available
- Suitable for use with acids and alkalies, resistant to cleaning agents and lubricants

Further information

➔ www.festo.com/catalogue

3.1.6 CRQS Stainless steel

Push-in fitting

Male thread
with external hex



Type	D1	D2	Part No.
CRQS	M5	4	162860
		6	162861



Type	D1	D2	Part No.
CRQS	R1/8	4	132643
		6	162862
		8	162863
	R1/4	6	132644
		8	162864
		10	162865
	R3/8	10	162866
		12	162867
	R1/2	12	162868
		16	162869

Male thread

with internal hex



Type	D1	D2	Part No.
CRQS-...-I	M5	4	132328
		6	132329
	R1/8	6	132330
		8	132331
	R1/4	8	132332
		10	132333
	R3/8	10	132334
		12	132335
	R1/2	12	132336
		16	132337

Push-in connector



Type	D1	D2	Part No.
CRQS	4	4	130645
	6	6	130646
	8	8	130647
	10	10	130648
	12	12	130649
	16	16	130650
Reducing			
CRQS	6	4	130651
	8	6	130652
	10	8	130653
	12	10	130654
	16	12	130655

Push-in bulkhead connector



Type	D1	D2	Part No.
CRQSS	4	4	164210
	6	6	164211
	8	8	164213
	10	10	164215
	12	12	164217
	16	16	164219

Tubing, with standard O.D. → 15

3.1.6 CRQS Stainless steel

Push-in L-fitting

360° rotatable

Male thread
with external hex



Type	D1	D2	Part No.
CRQSL	M5	4	162870
		6	162871

Push-in T-fitting

360° rotatable

Male thread
with external hex



Type	D1	D2	Part No.
CRQST	M5	4	164200
		6	164201



Type	D1	D2	Part No.
CRQSL	R1/8	4	132598
		6	162872
		8	162873
	R1/4	6	132599
		8	162874
		10	162875
	R3/8	10	162876
		12	162877
	R1/2	12	162878
		16	162879



Type	D1	D2	Part No.
CRQST	R1/8	6	164202
		8	164203
	R1/4	8	164204
		10	164205
	R3/8	10	164206
		12	164207
	R1/2	12	164208
		16	164209

Push-in L-connector



Type	D1	Part No.
CRQSL	4	130662
	6	130663
	8	130664
	10	130665
	12	130666
	16	130667

Push-in T-connector



Type	D1	D2	Part No.
CRQST	4	4	130668
	6	6	130669
	8	8	130670
	10	10	130671
	12	12	130672
	16	16	130673

3.1.6 CRQS
Stainless steel

Push-in Y-connector



Type	D1	D2	Part No.
CRQSY	4	4	130656
	6	6	130657
	8	8	130658
	10	10	130659
	12	12	130660
	16	16	130661



3.1 For standard O.D. tubing

3.1.7 QS-V0, Resistant to welding spatter

Faultless operation in applications involving welding spatter

No chance for welding spatter: the push-in fitting QS-V0 specially developed for the welding spatterresistant double-sheathed tubing PAN-V0 is designed to also hold the external tubing. This rules out the possibility of a gap forming between the tubing and fitting where welding spatter could gain entry.

The materials used for the push-in fitting QS-V0 comply with the most stringent requirements category V0 according to UL 94 and therefore guarantee optimum protection in areas where there is a risk of fire.

- For environments with flying sparks
- For increased requirements for fire protection, for example in automobile production
- Flame-retardant to UL 94 V0

Further information

➔ www.festo.com/catalogue

3.1.7 QS-V0, Resistant to welding spatter

Push-in fitting

Male thread
with external hex



Type	D1	D2	Part No.
QS-V0	R1/8	4	132888
		6	160500
		8	160501
	R1/4	6	160502
		8	160503
		10	160504
		12	160505
	R3/8	8	160506
		10	160507
		12	160508
	R1/2	10	160509
		12	160510

Push-in connector



Type	D1	Part No.
QS-V0	4	132890
	6	160546
	8	160547
	10	160548
	12	160549



Type	D1	D2	Part No.
QS-V0	G1/8	6	186314
		8	186315
	G1/4	6	186316
		8	186317
		10	186318
		12	186319
	G3/8	8	186320
		10	186321
		12	186322
	G1/2	10	186323
		12	186324

Tubing, with standard O.D. → 15

3.1.7 QS-V0, Resistant to welding spatter

Push-in L-fitting

Male thread
with external hex



Type	D1	D2	Part No.
QSL-V0	R ¹ / ₈	4	132891
		6	160511
		8	160512
	R ¹ / ₄	6	160513
		8	160514
		10	160515
		12	160516
	R ³ / ₈	8	160517
		10	160518
		12	160519
	R ¹ / ₂	10	160520
		12	160521

Push-in L-connector



Type	D1	Part No.
QSL-V0	4	132893
	6	160540
	8	160541
	10	160542
	12	160543



Type	D1	D2	Part No.
QSL-V0	G ¹ / ₈	6	186325
		8	186326
	G ¹ / ₄	6	186327
		8	186328
		10	186329
		12	186330
	G ³ / ₈	8	186331
		10	186332
		12	186333
	G ¹ / ₂	10	186334
		12	186335

3.1.7 QS-V0, Resistant to welding spatter

Push-in T-fitting

Male thread
with external hex



Type	D1	D2	Part No.
QST-V0	R1/8	4	132894
		6	160522
		8	160523
	R1/4	6	160524
		8	160525
		10	160526
		12	160527
	R3/8	8	160528
		10	160529
		12	160530
	R1/2	10	160531
		12	160532



Type	D1	D2	Part No.
QST-V0	G1/8	6	186336
		8	186337
	G1/4	6	186338
		8	186339
		10	186340
		12	186341
	G3/8	8	186342
		10	186343
		12	186344
	G1/2	10	186345
		12	186346

Push-in T-connector



Type	D1	Part No.
QST-V0	4	132896
	6	160533
	8	160534
	10	160535
	12	160536

Release tool

Release tool for
QS push-in fittings



Type	D1	Part No.
QSO	3 ... 10	158419



3.1 For standard O.D. tubing

3.1.8 NPKE, click fitting Polymer

NPKE makes changing tubing child's play

With the unique click mechanism, you can change a pipe or tube with one hand. The audible click noise signals that the connection is firm, secure and leak-tight – even if it's often connected and disconnected. The light, corrosion-free polymer brings many advantages: it is free of non-ferrous metals, fluorine, silicone and grease, is FDA approved, and suitable for clean rooms. Ideal for the electronics and semiconductor industries, assembly of small parts and battery cells, or for food and beverage production.

- Very easy to operate with one hand
- Many possible uses thanks to polymer as the sole material
- Easy-to-clean CleanLook without corners or edges

Further information

➔ www.festo.com/catalogue

3.1.8 NPKA, click fitting/ Push-in-connector

Click fitting

Male thread
with internal hex



Type	D1	D2	Part No.
NPKA-D	G1/8	6	1243489

L-Click fitting

Male thread
with external hex



Type	D1	D2	Part No.
NPKA-L	G1/8	6	1655429

Push-in T-connector



Type	D1	D2	Part No.
NPKA-T	6	6	1590710

3	Fittings	
3.2	For standard I.D. tubing	
	Push-on fittings	
	Selection aid	118

For secure and fast assembly: Barbed fittings

Fast, reliable, compact and extremely attractively priced: tried-and-tested barbed fittings from the Festo range of accessories. Reliable for use in applications where repeated releasing of the connections is not required.

- N/CN, barbed fittings
- CK, quick connectors

Further information

➔ www.festo.com/catalogue

3.2 Push-on fittings

Selection aid

Barbed fittings

Design	Type	Page
Straight design		
	N-...-PK	124
	CN-...-PK	124
	CRCN-...-PK	126
	SCN-PK	124
	RTU-PK	124
L-shape		
	LCN-...-PK	125
	LCNH-...-PK	125
	L-PK	125
T-shape		
	TCN-...-PK	125
	T-PK	126
V-shape		
	V-PK	126

Barbed fittings

Design	Type	Page
Y-shape		
	Y-PK	126
Barbed T-connector		
	FCN-...-PK	126

Quick connectors

Design	Type	Page
Straight design		
	NPCK	122
	ACK	128
	CK	128
	QCK	129
	SCK	129
	CV-PK	129

3.2 Push-on fittings

Selection aid

Quick connectors

Design	Type	Page
L-shape		
	GCK-...-KU	129
	LCK	130
	LCKN	130
T-shape		
	TCK	131
	FCK-...-KU	131

Union nut

Design	Type	Page
	MCK	131

Multiple distributor

Design	Type	Page
Hollow bolt		
	VT	132
Ring piece		
	LK	132
	TK	132





3.2 For standard I.D. tubing

3.2.1 NPCK, fitting Stainless steel

The first choice for food and splash zones

In these cleaning-intensive areas the NPCK is ideal. It fulfils all Clean Design requirements and is FDA approved. The special design of the union nut prevents dirty edges and the build-up of microorganisms or other forms of contamination. Also of interest to process automation and the pharmaceutical industry: the NPCK can carry a very wide range of media thanks to the use of stainless steel.

- Fulfils the hygiene requirements of HACCP
- Resistant to corrosion, cleaning agents and high temperatures
- Clean Design

Further information

➔ www.festo.com/catalogue

3.2.1 NPCK, fitting
Stainless steel

Fitting

Male thread with clamped
terminal connection



Type	D1	D2	Part No.
NPCK	M5	4	1857681
NPCK	G1/8	6	1366257
		8	1490383
	G1/4	8	1691701
		10	1489336
	G3/8	10	1489614

3.2 For standard I.D. tubing



3.2.2 N/CN, barbed fittings

N/CN barbed fittings: At home in tight corners

Smart design 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 sleeve – ideally using the Festo connecting and disconnecting pliers.

- For tubing O.D. from 2 to 6 mm. Numerous variants.
- Variants:
 - With sealing ring
 - With barbed fittings for Festo tubing
 - Corrosion-resistant
 - Acid-resistant
 - Rotatable

Further information

➔ www.festo.com/catalogue

3.2.2 N/CN, barbed fittings

Barbed fitting

with sealing ring



Type	D1	D2	Part No.
N-...-PK	M5	3	4446
		4	4902

Barbed fitting

with sealing ring



Type	D1	Di	Part No.
CN-...-PK	M3	2	15871
		3	15872
	M5	2	19521
		3	12255
		4	12256
	G1/8	3	11944
		4	11945
		6	11946
	G1/4	4	11947
		6	11948
	G3/8	6	11949

Barbed bulkhead fitting



Type	Di	Part No.
SCN-PK	2	19528
	3	11972
	4	11973
	6	11974

Barbed tubing connector

with sealing ring



Type	D1	D2	Part No.
RTU-PK	2	2	19541
	3	2	19542
		3	4805
		4	4499
	4	4	4806
		6	7604
	6	6	7605

3.2.2 N/CN, barbed fittings

Barbed L-fitting

360° rotatable



Type	D1	Di	Part No.
LCN-...- -PK	M3	2	30491
		3	30982
	M5	2	19523
		3	12257
		4	12258
	G $\frac{1}{8}$	3	11955
		4	11956
		6	11957
	G $\frac{1}{4}$	4	12958
		6	12959
	G $\frac{3}{8}$	6	12960

Barbed L-fitting

360° rotatable



Type	D1	Di	Part No.
LCNH-...- -PK	M5	2	35982
			35983
	G $\frac{1}{8}$	3	35985
		4	35986
		6	35987
	G $\frac{1}{4}$	4	35988
		6	35989
	G $\frac{3}{8}$	6	35990

Barbed L-connector



Type	Di	Part No.
L-PK	2	19539
	3	7473
	4	9584
	6	150012

Barbed T-fitting

360° rotatable



Type	D1	Di	Part No.
TCN-...- -PK	M3	2	30492
		3	30983
	M5	2	19525
		3	12259
		4	12432
	G $\frac{1}{8}$	3	11961
		4	11962
		6	11963
	G $\frac{1}{4}$	4	11964
		6	11965
	G $\frac{3}{8}$	6	11966

3.2.2 N/CN, barbed fittings

Barbed T-connector



Type	Di	Part No.
T-PK	2	30919
	3	7267
	4	9585
	6	150015

Barbed V-connector



Type	Di	Part No.
V-PK	2	30918
	3	7268
	4	30920
	6	150014

Barbed Y-connector



Type	Di	Part No.
Y-PK	2	19540
	3	7269
	4	9586
	6	150013

Barbed T-connector



Type	D1	D2	Part No.
FCN-PK	2	2	19527
	3	3	14768
	2		31314
	4	4	14769
	3		31315
	6	6	14770
	4		31316

Barbed fitting

Stainless steel with sealing ring



Type	D1	Di	Part No.
CRCN-PK	M5	3	30985
		4	13967
		6	13968
	G1/8	4	13969
		6	13970
		8	13971
	G1/4	6	13972
		8	13973
	G3/8	8	13974

3.2 For standard I.D. tubing



3.2.3 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. To connect, simply attach the tubing and secure it with the union nut.

- For tubing O.D. from 3 to 13 mm. Numerous variants.
- Variants:
 - Aluminium
 - Polyamide
 - Sealing ring
 - Moulded-on sealing rim

Further information

➔ www.festo.com/catalogue

3.2.3 CK, quick connectors

Quick connector

Female thread with sealing ring



Type	D1	Di	Part No.
ACK	G ¹ / ₈	3	5664
		4	3714
		6	7842
	G ¹ / ₄	4	3713
		6	3712
	G ³ / ₈	6	3711
		9	3710
	G ¹ / ₂	13	4099

Quick connector

Male thread with sealing ring or moulded-on sealing rim



Type	D1	Di	Part No.
Aluminium design			
CK	M5	3	3561
		4	3562
	G ¹ / ₈	3	3563
		4	2027
		6	2028
	G ¹ / ₄	4	2029
		6	2030
		9	2031
	G ³ / ₈	6	2032
		9	2033
		13	4097
	G ¹ / ₂	13	4098
Polymer design			
CK-...-KU	G ¹ / ₈	3	6253
		4	6254
		6	6255
	G ¹ / ₄	4	6256
		6	6257
		9	6258
	G ³ / ₈	6	6460
		9	6468

3.2.3 CK, quick connectors

Bulkhead quick connector

Female thread with sealing ring



Type	D1	Di	Part No.
QCK	M5	3	9424
	G ¹ / ₈	4	9425
	G ¹ / ₄	6	9426
	G ³ / ₈	9	9427

Bulkhead quick connector



Type	Di	Part No.
Aluminium design		
SCK	3	9420
	4	9421
	6	9422
	9	9423
Polymer design		
SCK-...- -KU	3	9387
	4	9388
	6	9389
	9	9390

End cap



Type	Di	Part No.
CV-PK	3	6213
	4	6214
	6	6215
	9	6216

Elbow quick connector



Type	D1	Di	Part No.
GCK-...- -KU	R ¹ / ₈	4	6267
		6	6268
	R ¹ / ₄	4	6269
		6	6270
	R ³ / ₈	6	6271
		9	6272

3.2.3 CK, quick connectors

Elbow quick connector

Rotatable with 2 sealing rings
or moulded-on sealing rim



Type	D1	Di	Part No.
Die-cast zinc design			
LCK	M5	3	4468
		4	4562
	G1/8	3	4136
		4	4469
		6	4470
		9	11452
	G1/4	4	4471
		6	4472
		9	11452
	G3/8	6	4473
		9	4474
	G1/2	13	4100
Polymer design			
LCK-...- -KU	G1/8	4	6259
		6	6260
	G1/4	4	6261
		6	6262

Elbow quick connector

Rotatable with sealing ring
OL-...



Type	D1	Di	Part No.
LCKN	M5	3	164995
		4	164996
	G1/8	3	164997
		4	164998
		6	164999
	G1/4	4	165000
		6	165001
	G3/8	6	165002

3.2.3 CK, quick connectors

T quick connector

Rotatable



Type	D1	Di	Part No.
Die-cast zinc design			
TCK	M5	3	4484
		4	4563
	G ¹ / ₈	3	4137
		4	4485
		6	4486
	G ¹ / ₄	4	4487
		6	4488
Aluminium design			
TCK	G ³ / ₈	6	4489
		9	4490
	G ¹ / ₂	13	4101
Polymer design			
TCK-...- -KU	G ¹ / ₈	4	6263
		6	6264
	G ¹ / ₄	4	6265
		6	6266

T-distributor



Type	Di	Part No.
FCK-...- -KU	3	6273
	4	6274
	6	6275
	9	6276

Union nut

for tubing connectors



Type	Di	Part No.
Aluminium design		
MCK	3	205254
	4	2965
	4	205257
	6	2966
	9	2967
	13	206504
Polymer design		
MCK-...- -KU	3	211289
	4	211291
	6	211292
	9	211293

3.2.3 CK, quick connectors

Hollow bolt VT for 2 ring pieces



Type	D1	Part No.
VT	M5	206145
	G1/8	4593
		206146
	G1/4	206147
	G3/8	206148

Hollow bolt VT for 3 ring pieces



Type	D1	Part No.
VT	M5	4594
	G1/8	4595
		4596
	G1/4	2335
	G3/8	2336

Ring piece LK



Type	D1	Part No.
Die-cast zinc design		
LK	3	4475
	3	4597
	4	4476
	6	4477
	4	4478
	6	4479
	6	4480
Polymer design		
LK	4	6280
	6	6281
	4	6282
	6	6283

Ring piece TK



Type	D1	Part No.
Die-cast zinc design		
TK	M5	4491
	G1/8	4598
		4492
		4493
	G1/4	4494
		4495
	G3/8	4496
Polymer design		
TK	G1/8	6284
		6285
	G1/4	6286
		6287

Tubing, with standard I.D. → 35



3 Fittings

3.3 Push-in fittings for pipes

Selection aid 134

A comprehensive range of nominal sizes

Practical design – for practical applications: the CQ system retains the pipes externally in a way which ensures that there is no reduction of nominal size. Extremely easy and fast to install; simply push in – you don't even need any tools! Suitable for polyamide and aluminium pipes.

- For O.D.: 12, 15, 18, 22 and 28 mm
- Also suitable for plastic tubing PAN and PUN with O.D. 12mm
- For compressed air, vacuum and liquids
- Can be re-used a number of times
- Plug connector materials FDA-approved

Further information

➔ www.festo.com/catalogue

3.3 Push-in fittings

Selection aid

Design	Type	Page
Straight design		
	CQ	135
	CQ-...H	135
	CQ	135
	CQ-...H	135
	CQH-...-QS	135
	CQC-...H	135
L-shape		
	CQL	136
T-shape		
	CQT	136

Design	Type	Page
Distributor		
	CQD	136
Fluid separator		
	CQA	136
Retaining ring		
	CQSR	136
Release tool		
	CQO	136

3.3.1 CQ, push-in fittings

Push-in fitting with sealing ring



Type	D1	D2	Part No.
CQ	G $\frac{3}{8}$	12	177682
		12	177683
		15	177684
		18	177685
	G $\frac{3}{4}$	22	177686

Push-in fitting with push-in sleeve and sealing ring



Type	D1	D2	Part No.
CQ-...H	G $\frac{3}{8}$	12	177705
		15	177707
		12	177706
		15	177708
		18	177709
		22	177710
	G $\frac{3}{4}$	22	177711
	G1	28	194589

Push-in connector



Type	D1	Part No.
CQ	12	177695
	15	177696
	18	177697
	22	177698
	28	194586

Push-in connector with push-in sleeve



Type	D1	D2	Part No.
CQ-...H	12	15	177701
	15	18	177702
	15	22	177703
	18	22	177704
	22	28	196231

Push-in sleeve for connecting CQ to QS



Type	D1	D2	Part No.
CQH-...- -QS	15	12	177721
	18	16	177722
	22	16	177723

Blanking plug



Type	D1	Part No.
CQC-...H	12	177712
	15	177713
	18	177714
	22	177715
	28	194590

3.3.1 CQ, push-in fittings

Push-in elbow connector



Type	D1	Part No.
CQL	12	177691
	15	177692
	18	177693
	22	177694
	28	194587

Push-in T-connector



Type	D1	D2	Part No.
CQT	12	12	177687
	15	15	177688
	18	18	177689
	22	22	177690
	28	28	194588
Reducing			
CQT	18	15	177699
	22	15	177700

Distributor

with 3 blanking plugs



Type	D1	Part No.
CQD	G $\frac{1}{2}$	177717

Fluid separator



Type	D1	Part No.
CQA	22	177716

Fluid separator¹⁾



Type	D1	Part No.
CQA	28	196984

1) in combination with CQT-28, Part No. 194588

Retaining ring



Type	D1	Part No.
CQSR	12	175727
	15	175728
	18	175729
	22	175730

Release tool



Type	D1	Part No.
CQO	15	175725
	22	175726



4 Threaded fittings Selection aid 138

Threaded fittings NPFC

With the threaded fittings nothing now stands in the way of the costeffective installation of service units, control cabinets and other pneumatic installations.

- Operating temperature:
–20 ... +150 °C
- Operating pressure at 20 °C:
–0.95 ... +50 bar
- Medium:
compressed air, vacuum,
others on request
- Version:
nickel-plated brass
- It is recommended to seal
parallel threads with thread
sealing tape GWB-0,1 (Part
No. 9076)

Further information

➔ www.festo.com/catalogue

4 Threaded fittings

Selection aid

Design	Type	Page
Straight design		
	SCM	139
	NPFC-D	139
	E	140
	ESK	140
	NPFC-S	140
	QM	141
	NPFC-R	141
	QMR	141
	NPFC-R	142
	D	142
	NPFC-E	143
	B	143

Design	Type	Page
L-shape		
	NPFC-L	144
T-shape		
	NPFC-T	144
Y-shape		
	NPFC-Y	146
X-shape		
	NPFC-X	146

4 Threaded fittings

Internal bulkhead connector



Type	D1	D5	Part No.
Blue anodised aluminium			
SCM	M5	M10x1	9969
	G1/8	M14x1.5	9970
	G1/4	M20x1.5	9971
	G3/8	M24x1.5	9972
	G1/2	M30x1.5	9973

Double nipple



Type	D1	D2	Part No.
Nickel-plated brass			
NPFC-D	M5	M5	8030267
	M7	G1/8	8030268
	G1/8	G1/8	8030269
		G1/4	8030270
		G3/8	8030271
	G1/4	G1/4	8030272
		G3/8	8030273
		G1/2	8030274
	G3/8	G3/8	8030275
		G1/2	8030276
	G1/2	G1/2	8030277
	R1/8	R1/8	8030278
		R1/4	8030279
		R3/8	8030280
	R1/4	R1/4	8030281
		R3/8	8030282
		R1/2	8030283
	R3/8	R3/8	8030284
		R1/2	8030285
	R1/2	R1/2	8030286
		R3/4	8030287
	R3/4	R3/4	8030288
	R1	R1	8030289

4 Threaded fittings

Double nipple

with 2 sealing rings



Type	D1	D2	Part No.
High-alloy steel			
E-...-S9	M3	M3	30987
Steel			
E	M5	M5	4139
		G ¹ / ₈	4138
Aluminium			
E	G ¹ / ₈	G ¹ / ₈	3573
		G ¹ / ₄	3574
	G ¹ / ₄	G ¹ / ₄	3575
		G ³ / ₈	3576
	G ³ / ₈	G ³ / ₈	3578
		G ¹ / ₂	3579
	G ¹ / ₂	G ¹ / ₂	3580
		G ³ / ₄	3582
	G ³ / ₄	G ³ / ₄	3584
Brass			
E	M7	G ¹ / ₈	534148
	G ¹ / ₈	G ¹ / ₈	15621
		G ¹ / ₄	15622
		G ³ / ₈	534150
	G ¹ / ₄	G ¹ / ₄	15623
		G ³ / ₈	15624
		G ¹ / ₂	534149
	G ³ / ₈	G ³ / ₈	15625
		G ¹ / ₂	15626
	G ¹ / ₂	G ¹ / ₂	15627
		G ³ / ₄	15628
	G ³ / ₄	G ³ / ₄	15629

Double nipple

Adjustable for angular compensation



Type	D1	D2	Part No.
Brass			
ESK	R ¹ / ₈	R ¹ / ₈	151520
		R ¹ / ₄	534151
		R ³ / ₈	534155
	R ¹ / ₄	R ¹ / ₄	151521
		R ³ / ₈	534152
		R ¹ / ₂	534153
	R ³ / ₈	R ³ / ₈	151522
		R ¹ / ₂	534154
	R ¹ / ₂	R ¹ / ₂	151523

Pipe coupling sleeve



Type	D1	Part No.
Nickel-plated brass		
NPFC-S	M5	8030290
	G ¹ / ₈	8030291
	G ¹ / ₄	8030292
	G ³ / ₈	8030293
	G ¹ / ₂	8030294
	G ³ / ₄	8030295

4 Threaded fittings

Pipe coupling sleeve



Type	D1	Part No.
Steel		
QM	M5	3560
Blue anodised aluminium		
QM	G1/8	2254
	G1/4	2255
	G3/8	2256
	G1/2	2257
	G3/4	4226
	G1	9968

Pipe coupling sleeve with sealing ring



Type	D1	D2	Part No.
Steel			
QM	M5	M5	36169
Blue anodised aluminium			
QM	G1/8	G1/8	36170
	G1/4	G1/4	36171
	G3/8	G3/8	36172
	G1/2	G1/2	187387

Reducing sleeve



Type	D1	D2	Part No.
Aluminium			
NPFC-R	G3/8	G1/8	8030296
	G3/4	G1/2	8030297

Reducing sleeve



Type	D1	D2	Part No.
Nickel-plated brass			
QMR	G1/8	M5	153281
	G1/4	G1/8	153282
	G3/8	G1/4	153283
	G1/2	G3/8	153284

Reducing nipple



Type	D1	D2	Part No.
Nickel-plated brass			
NPFC-R	M5	G1/8	8030314
		G1/4	8030315
		G3/8	8030316
	G1/4	G3/8	8030317
	G3/8	G1/2	8030318



Type	D1	D2	Part No.
Nickel-plated brass			
NPFC-R	G1/8	M5	8030307
	G1/4	G1/8	8030308
	G3/8	G1/8	8030309
		G1/4	8030310
	G1/2	G1/4	8030311
		G3/8	8030312
	G3/4	G1/2	8030313

Reducing nipple with sealing ring



Type	D1	D2	Part No.
Brass			
D	M5	M7	161359



Type	D1	D2	Part No.
High-alloy stainless steel			
D	M3	M5	30980
Brass			
D	M5	G1/8	3842
		G1/4	197632
	M7	G1/8	534144
		G1/4	3577
	G1/8	G3/8	534147
		G1/2	197633
	G1/4	G3/4	534145
		G1/2	3585
	G3/8	G3/4	534146
		G1	197634
	G1/2	G1	9168
		G3/4	9168

4 Threaded fittings

Extension piece



Type	D1	D2	Part No.
Nickel-plated brass			
NPFC-E1	G1/8	G1/8	8030298
	G1/4	G1/4	8030299
	G3/8	G3/8	8030300
	G1/2	G1/2	8030301
NPFC-E2	G1/8	G1/8	8030302
	G1/4	G1/4	8030303
NPFC-E3	G1/8	G1/8	8030304
	G1/4	G1/4	8030305
NPFC-E4	G1/8	G1/8	8030306

Blanking plug with sealing ring



Type	D1	Part No.
High-alloy stainless steel		
B	M3	30979



Type	D1	Part No.
Aluminium		
B	M5	3843
		174308



Type	D1	Part No.
Steel		
B	M7	174309
	G1/8	3568
	G1/4	3569
	G3/8	3570
	G1/2	3571
	G3/4	3572
	G1	5763

4 Threaded fittings

Elbow fitting



Type	D1	Part No.
Nickel-plated brass		
NPFC-L	M5	8030208
	G1/8	8030209
	G1/4	8030210
	G3/8	8030211
	G1/2	8030212
	G3/4	8030213
	G1	8030214



Type	D1	D2	Part No.
Nickel-plated brass			
NPFC-L	M5	M5	8030215
	G1/8	R1/8	8030216
	G1/4	R1/4	8030217
	G3/8	R3/8	8030218
	G1/2	R1/2	8030219
	G3/4	R3/4	8030220
	G1	R1	8030221



Type	D1	Part No.
Nickel-plated brass		
NPFC-L	M5	8030222
	R1/8	8030223
	R1/4	8030224
	R3/8	8030225
	R1/2	8030226
	R3/4	8030227

T-fitting



Type	D1	Part No.
Nickel-plated brass		
NPFC-T	G1/8	8030235
	G1/4	8030236
	G3/8	8030237
	G1/2	8030238
	G3/4	8030239
	G1	8030240



Type	D1	D2	Part No.
Nickel-plated brass			
NPFC-T	R1/8	G1/8	8030241
	R1/4	G1/4	8030242
	R3/8	G3/8	8030243
	R1/2	G1/2	8030244

4 Threaded fittings

T-fitting



Type	D1	D2	Part No.
Nickel-plated brass			
NPFC-T	M5	M5	8030245
	G $\frac{1}{8}$	R $\frac{1}{8}$	8030246
	G $\frac{1}{4}$	R $\frac{1}{4}$	8030247
	G $\frac{3}{8}$	R $\frac{3}{8}$	8030248
	G $\frac{1}{2}$	R $\frac{1}{2}$	8030249
	G $\frac{3}{4}$	R $\frac{3}{4}$	8030250
	G1	R1	8030251



Type	D1	D2	Part No.
Nickel-plated brass			
NPFC-T	G $\frac{1}{8}$	R $\frac{1}{8}$	8030255
	G $\frac{1}{4}$	R $\frac{1}{4}$	8030256
	G $\frac{3}{8}$	R $\frac{3}{8}$	8030257
	G $\frac{1}{2}$	R $\frac{1}{2}$	8030258

T-fitting



Type	D1	D2	Part No.
Nickel-plated brass			
NPFC-T	R $\frac{1}{8}$	G $\frac{1}{8}$	8030259
	R $\frac{1}{4}$	G $\frac{1}{4}$	8030260
	R $\frac{1}{2}$	G $\frac{1}{2}$	8030261



Type	D1	Part No.
Nickel-plated brass		
NPFC-T	R $\frac{1}{4}$	8030252
	R $\frac{3}{8}$	8030253
	R $\frac{1}{2}$	8030254

4 Threaded fittings

Y-fitting



Type	D1	Part No.
Nickel-plated brass		
NPFC-Y	G $\frac{1}{4}$	8030228
	G $\frac{3}{8}$	8030229
	G $\frac{1}{2}$	8030230



Type	D1	D2	Part No.
Nickel-plated brass			
NPFC-Y	R $\frac{1}{8}$	G $\frac{1}{8}$	8030231
	R $\frac{1}{4}$	G $\frac{1}{4}$	8030232
	R $\frac{3}{8}$	G $\frac{3}{8}$	8030233
	R $\frac{1}{2}$	G $\frac{1}{2}$	8030234

X-fitting



Type	D1	Part No.
Nickel-plated brass		
NPFC-X	G $\frac{1}{4}$	8030262
	G $\frac{3}{8}$	8030263
	G $\frac{1}{2}$	8030264



Type	D1	D2	Part No.
Nickel-plated brass			
NPFC-X	G $\frac{1}{4}$	R $\frac{1}{4}$	8030265
	G $\frac{1}{2}$	R $\frac{1}{2}$	8030266



5	Shut-off, pressure control and flow control valves	
5.1	Shut-off valves	
	Selection aid	148
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Shut-off valves – “Stop & Go” for your compressed air

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 – Festo’s shut-off valves are the obvious choice for applications requiring complete shut-off of compressed air thanks to their impressive ability to shut off and quickly restore the supply of compressed air.

- Piloted non-return valves HGL-... are activated as soon as no control signal is present.
- Quick exhaust valves SE/SEU-.../VBQF-... for increased speeds with single-acting or double-acting cylinders. SE-... with ducted exhaust air
- Ball valves QH-... and shut-off valves VBOH-.../HE-... for shutting off the compressed air.
- Function combination VBNF-... piloted non-return valves with manual exhaust function

Further information

➔ www.festo.com/catalogue

5.1 Shut-off valves

Selection aid

Non-return valve

Design	Type	Page
QS push-in connector at both ends		
	H-QS	151
With connecting thread and QS push-in connection		
	HA	151
	HB	151
Connecting thread at both ends		
	H	152
Manual override actuator		
	HAB	152

Non-return valve, piloted

Design	Type	Page
Connecting thread at both ends		
	HGL	153
With connecting thread and QS push-in connection		
	HGL-QS	154

Quick-exhaust valve

Design	Type	Page
Without silencer		
	SE	155
With silencer		
	SEU	155
Flat design		
	VBQF	156

5.1 Shut-off valves

Selection aid

Ball valve, manually actuated

Design	Type	Page
With QS push-in connection at both ends		
	QH-QS	157
With QS push-in connection and bulkhead fitting		
	QHS-QS	157
With PTFE-coated connecting thread and QS push-in connector		
	QH-QS	157
With connecting thread at both ends		
	QH	157

On-off valve

Design	Type	Page
2/2-way valve		
	HE-2	158
3/2-way valve		
	HE-3	159

Hand slide valve

Design	Type	Page
With connecting thread at both ends		
	W	160
High flow rate		
	VBOH	160

Functional combination

Design	Type	Page
With connecting thread and QS push-in connections, with piloted non-return function		
	VBNF	161



5.1.1 Non-return valves

Non-return valve

Housing: Aluminium, black anodised; brass, nickel-plated

Seals: Nitrile rubber



Type	D2	D1	qnN [l/min]	Part No.
H-QS	4	4	136	153462
	6	6	282	153463
	8	8	681	153464
	10	10	1480	153465
	12	12	1715	153466

Housing: Brass, nickel-plated

Seals: Nitrile rubber



Type	D2	D1	qnN [l/min]	Part No.
Flow direction: male thread → push-in connection				
HA	4	M5	148	153444
	4	R $\frac{1}{8}$	138	153446
	6		311	153448
	8		331	153452
	6	R $\frac{1}{4}$	302	153450
	8		670	153454
	10	R $\frac{3}{8}$	1740	153456
	12		1876	153458
	12	R $\frac{1}{2}$	2230	153460
Flow direction: push-in connection → male thread				
HB	M5	4	144	153445
	R $\frac{1}{8}$	4	142	153447
		6	335	153449
		8	314	153453
	R $\frac{1}{4}$	6	294	153451
		8	696	153455
	R $\frac{3}{8}$	10	1700	153457
		12	1886	153459
	R $\frac{1}{2}$	12	2206	153461

Tubing, with standard O.D. → 15

5.1.1 Non-return valves

Non-return valve

Housing: Brass, nickel-plated; Seals: Nitrile rubber



Type	D2 ¹⁾	D1 ¹⁾	qnN [l/min]	Part No.
H	M5	M5	115	3671

1) Female thread



Type	D2 ¹⁾	D1 ²⁾	qnN [l/min]	Part No.
H	G1/8	G1/8	280	3324 ³⁾

1) Female thread

2) Male thread

3) Sealing rings for male thread are included in the scope of delivery.

Housing: Wrought aluminium alloy, anodised

Seals: Nitrile rubber



Type	D2 ²⁾	D1 ²⁾	qnN [l/min]	Part No.
H	G1/4	G1/4	1000	11689 ³⁾
	G3/8	G3/8	2000	11690 ³⁾
	G1/2	G1/2	5500	11691 ³⁾
	G3/4	G3/4	5900	11692 ³⁾

2) Male thread

3) Sealing rings for male thread are included in the scope of delivery.

Manual override actuator

Housing: Aluminium

Seals: Nitrile rubber



Type	D2	D1	qnN [l/min]	Part No.
HAB	G1/8	G1/8	165	184585
	G1/4	G1/4		184586
	G3/8	G3/8		184587
	G1/2	G1/2		184588

5.1.1 Non-return valves

Non-return valve, piloted

Housing: Die-cast zinc, wrought aluminium alloy, anodised

Seals: Nitrile rubber



Type	D2	D1	qnN [l/min]	Part No.
HGL	M5	M5	130	★ 530029



Type	D2	D1	qnN [l/min]	Part No.
HGL	G $\frac{1}{8}$	G $\frac{1}{8}$	300	543253



Type	D2	D1	qnN [l/min]	Part No.
HGL	G $\frac{1}{8}$	G $\frac{1}{8}$	300	★ 530030
	G $\frac{1}{4}$	G $\frac{1}{4}$	550	★ 530031
	G $\frac{3}{8}$	G $\frac{3}{8}$	1100	★ 530032
	G $\frac{1}{2}$	G $\frac{1}{2}$	1600	★ 530033

5.1.1 Non-return valves

Non-return valve, piloted

Housing: Die-cast zinc, wrought aluminium alloy, anodised

Seals: Nitrile rubber



Type	D2	D1	qnN [l/min]	Part No.
HGL-QS	M5	4	130	★ 530038



Type	D2	D1	qnN [l/min]	Part No.
HGL-QS	G1/8	4	200	★ 530039
		6	270	★ 530040
	G1/4	8	390	★ 530041
		10	400	★ 530042
	G3/8	8	830	★ 530043
		10	890	★ 530044
	G1/2	12	1400	★ 530045

5.1.2 Quick exhaust valves

Quick exhaust valve without silencer

Housing: G¹/₈, G¹/₄ die-cast zinc; G³/₈, G¹/₂ die-cast aluminium;
G³/₄ wrought Aluminium alloy anodised

Seals: Nitrile rubber



Type	D1	D2	D3	qnN [l/min]		Part No.
				1 → 2	2 → 3	
SE	G ¹ / ₈	G ¹ / ₈	G ¹ / ₈	300	660	9685
	G ¹ / ₄	G ¹ / ₄	G ¹ / ₄	960	1200	9686
	G ³ / ₈	G ³ / ₈	G ³ / ₈	2880	2760	9687
	G ¹ / ₂	G ¹ / ₂	G ¹ / ₂	4560	6480	9688
	G ³ / ₄	G ³ / ₄	G ³ / ₄	2500	7500	2280

Quick exhaust valve with silencer

Housing: G¹/₈, G¹/₄ die-cast zinc; G³/₈, G¹/₂ die-cast aluminium



Type	D1	D2	qnN [l/min]		Part No.
			1 → 2	2 → 3	
SEU	G ¹ / ₈	G ¹ / ₈	300	550	4616
	G ¹ / ₄	G ¹ / ₄	960	1100	6753
	G ³ / ₈	G ³ / ₈	2880	2280	6755
	G ¹ / ₂	G ¹ / ₂	4560	4020	6822

5.1.2 Quick exhaust valves

Quick exhaust valve

Housing: Die-cast zinc, die-cast aluminium

Unducted exhaust air



Type	D2	D1	qnN [l/min]		Part No.
			1 → 2	2 → 3	
VBQF-U	G1/8	G1/8	350	—	547531
		6	350		547532
	G1/4	G1/4	960		548001
		8	800		548002

Ducted exhaust air



Type	D2	D1	qnN [l/min]		Part No.
			1 → 2	2 → 3	
VBQF-D	G1/8	G1/8	350	850	547533
		8	350	850	547534
	G1/4	G1/4	960	1500	548003

5.1.3 Ball valves

Ball valve, manually actuated

Housing: Polybutylene terephthalate



Type	D2	D1	qnN [l/min]	Part No.
QH-QS	4	4	148	153483
	6	6	533	153484



Type	D2	D1	qnN [l/min]	Part No.
QHS-QS	6	6	528	153485



Type	D2	D1	qnN [l/min]	Part No.
QH-QS	4	R1/8	235	153486
	6		560	153487

Ball valve, manually actuated

Housing: Brass

Seals: Polytetrafluoroethylene



Type	D2	D1	qnN [l/min]	Part No.
QH	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
	G1 1/2	G1 1/2	84000	6837

5.1.4 On-off valves

On-off valve, 2/2-way valve
Housing: Polybutylene terephthalate



Type	D2	D1	qnN [l/min]	Part No.
HE-2-QS	6	6	278	153467
	8	8	388	153468
	10	10	761	153469
	12	12	830	153470



Type	D2	D1	qnN [l/min]	Part No.
HE-2-...-QS	6	R1/8	307	153471
	8	R1/4	396	153472
	10	R3/8	728	153473
	12	R1/2	776	153474

5.1.4 On-off valves

On-off valve, 3/2-way valve

Housing: Polybutylene terephthalate



Type	D2	D1	qnN [l/min]	Part No.
HE-3-QS	6	6	270	153475
	8	8	390	153476
	10	10	780	153477
	12	12	840	153478



Type	D2	D1	qnN [l/min]	Part No.
HE-3-...-QS	6	R $\frac{1}{8}$	301	153479
	8	R $\frac{1}{4}$	380	153480
	10	R $\frac{3}{8}$	733	153481
	12	R $\frac{1}{2}$	796	153482



Type	D2	D2	qnN [l/min]	Part No.
HE-3	R $\frac{1}{8}$	R $\frac{1}{8}$	301	153296
	R $\frac{1}{4}$	R $\frac{1}{4}$	380	153297
	R $\frac{3}{8}$	R $\frac{3}{8}$	730	153298

5.1.4 On-off valves

Hand slide valve

Threaded spigot: Brass, nickel-plated

Seals: Nitrile rubber



Type	D2	D1	qnN [l/min]	Part No.
W-3	M5	M5	120	4451
	G1/8	G1/8	600	2339
	G1/4	G1/4	1000	2340
	G3/8	G3/8	1400	2341
	G1/2	G1/2	2000	2342
	G3/4	G3/4	6800	4052

Hand slide valve

Threaded spigot: Anodised wrought aluminium alloy

Seals: Nitrile rubber



Type	D2	D1	qnN [l/min]	Part No.
VBOH	M5	M5	236	1609969
	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

Tubing, with standard O.D. → 15

5.1.5 Function combinations

Functional combination

with a piloted non-return function and a manual exhaust function

Housing, end cap: Polybutylene terephthalate

Hollow bolt: wrought aluminium alloy

Seals: Nitrile rubber



Type	D2	D1	qnN [l/min]	Part No.
VBNF	G1/8	6	260	8001460
	G1/4	8	620	1927027





5 Shut-off, pressure control and flow control valves

5.2 Pressure control valves Selection aid 164

5.2.1 Pressure regulators 165

5.2.2 Differential pressure regulators 167

Pressure regulators – for optimum performance

You need your system to operate at peak performance every day. Pressure regulators and differential pressure regulators can help you achieve this. They guarantee the required pressure directly at the system, regardless of the input pressure, and compensate pressure peaks on the supply side.

Pressure regulators LR-... and LRMA-... keep the output pressure stable

- Swivel joint 360° rotatable
- Flow rates 22 to 125 l/min
- Variants:
 - With or without pressure gauge
 - Screw-in or inline variants
- Connections:
 - M5 to R $\frac{1}{4}$

Differential pressure regulators LRL-... and LRL-... maintain a manually set differential pressure between the primary pressure at the screw-in thread and the secondary pressure at the QS connection.

- Swivel joint 360° rotatable
- Flow rates 50 to 500 l/min
- LRL variants:
 - With non-return function
 - Screw-in or inline variants
- Connections:
 - M5 to R $\frac{1}{4}$
- Tubing with swivel connector, 360° rotatable
- Flow rates 0 to 100 l/min
- LRL variants:
 - With or without pressure gauge
 - Screw-in or inline variants
- Connections:
 - M5 to R $\frac{1}{4}$

Further information

➔ www.festo.com/catalogue

5.2 Pressure control valves

Selection aid

Pressure regulator

without pressure gauge

Design	Type	Page
with QS push-in connector and individual thread		
	LR-...-QS	165
with QS push-in connector at both ends		
	LR-QS-...	165

Differential pressure regulator

without pressure gauge

Design	Type	Page
with QS push-in connector at top and screw-in thread		
	LRL	167
with QS push-in connector at side and screw-in thread		
	LRLL	167

Pressure regulator

with pressure gauge

Design	Type	Page
with QS push-in connector and individual thread		
	LRMA-...-QS	166
with QS push-in connector at both ends		
	LRMA-QS-...	166

5.2.1 Pressure regulators

Pressure regulator without pressure gauge

Housing: Polybuteneterephthalate



Type	D2	D1	qnN [l/min]	Part No.
LR-...-QS	4	M5	22	153532
	6		41	153533
	4	R $\frac{1}{8}$	46	153534
	6		63	153535
	8		69	153536
	6	R $\frac{1}{4}$	98	153537
	8		101	153538



Type	D2	D1	qnN [l/min]	Part No.
LR-QS-...	4	4	67	153540
	6	6	70	153541
	8	8	127	153542

5.2.1 Pressure regulators

Pressure regulator with pressure gauge

Housing: Polybuteneterephthalate



Type	D2	D1	qnN [l/min]	Part No.
LRMA-...- QS	4	M5	36	153488
	6		42	153490
	4	R $\frac{1}{8}$	59	153489
	6		75	153491
	8		87	153493
	6	R $\frac{1}{4}$	96	153492
	8		97	153494



Type	D2	D1	qnN [l/min]	Part No.
LRMA- QS-...	4	4	50	153495
	6	6	76	153496
	8	8	124	153497

5.2.2 Differential pressure regulators

Differential pressure regulator

Housing: Polybuteneterephthalate



Type	D2	D1	qnN [l/min] ¹⁾	Part No.
LRL	4	M5	30/30	153510
	6		30/30	153512
	4	R ¹ / ₈	96/93	153511
	6		115/115	153513
	8		120/115	153515
	6	R ¹ / ₄	241/240	153514
	8		224/224	153516
	10		231/231	153518
	8	R ³ / ₈	463/393	153517
	10		476/423	153519
	12		438/379	153520
	12	R ¹ / ₂	760/700	153521



Type	D2	D1	qnN [l/min] ¹⁾	Part No.
LRLL	4	M5	30/30	153498
	6		32/31	153500
	4	R ¹ / ₈	100/96	153499
	6		155/140	153501
	8		115/110	153503
	6	R ¹ / ₄	267/266	153502
	8		268/264	153504
	10		269/262	153506
	8	R ³ / ₈	474/340	153505
	10		456/411	153507
	12		518/423	153508
	12	R ¹ / ₂	730/700	153509

1) open/closed





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

Setting made easy:
such as metering a flow rate, for example for speed regulation of single- or double-acting cylinders. Festo's compact and sturdy oneway flow control valves provide the right solution for every application. The numerous variants suit every environment and are quick and easy to fit.

Function combinations

Numerous control functions integrated in one component: variable piston speeds, momentary intermediate stop and individual manual exhaust – saves time, costs, space.

5 Shut-off, pressure control and flow control valves

5.3 Flow control valves Selection aid 170

5.3.1 One-way flow control and flow control valves 173

- The product of your choice – for correct setting of the flow rate
- Fast installation with QS connections
- Maximum adaptability – directly at the cylinder or inline
- A large number of variants – GRLA/Z/O, GRGA/Z/O, GR/O; VFOC, VFOF
- Range of flow rates 0 – 2000 l/min
- Tight seal thanks to G thread
- Variants:
 - Precision flow control valves
 - Screw-in or inline variants
 - Stainless steel, die-cast zinc, polymer
- Connections:
 - For cylinders with M3 to G1½ connecting thread
 - For tubing with Ø 3 to 12 mm

Further information

➔ www.festo.com/catalogue

5.3 Flow control valves

Selection aid

Standard flow control valve with QS push-in connection, D series

Design	Type	Page
L-shaped outlet, slotted head screw		
	GRLA GRLZ	173
L-shaped outlet, knurled screw		
	GRLA	174
L-shaped outlet, slotted head screw		
	GRLA-F	174

Standard flow control valve with QS push-in connection, B series

Design	Type	Page
L-shaped outlet, knurled screw		
	GRLA	175

Standard flow control valve with QS push-in connection

Design	Type	Page
L-shaped outlet, internal hex		
	VFOF	175

Mini flow control valve with QS push-in connection

Design	Type	Page
L-shaped outlet, slotted head screw		
	GRLA GRLZ GRLO	176
Parallel outlet, slotted head screw		
	GRGA GRGZ	176

Standard flow control valve with female thread

Design	Type	Page
L-shaped outlet, slotted head screw		
	GRLA GRLZ GRLO	177
L-shaped outlet, knurled screw		
	GRLA GRLZ	177

5.3 Flow control valves

Selection aid

Standard flow control valve with barbed fitting PK

Design	Type	Page
L-shaped outlet, slotted head screw		
	GRLA	178
	GRLZ	
	GRLO	

Mini flow control valve with female thread

Design	Type	Page
Slotted head screw		
	GRLA	178
	GRLZ	
	GRLO	

Corrosion-resistant flow control valve with female thread

Design	Type	Page
L-shaped outlet, slotted head screw		
	CRGRLA	179

Inline flow control valve with QS push-in connections

Design	Type	Page
Knurled screw		
	GR	179
	GRO	

Retainer

Design	Type	Page
	GR-H-QS	179

Standard inline flow control valve with female thread

Design	Type	Page
Knurled screw		
	GR	180
	GRA	

5.3 Flow control valves

Selection aid

Flow control/silencer combination

Design	Type	Page
Slotted head screw		
	GRE	181
Knurled screw		
	VFFK	181
	GRU	181

Precision flow control valve

Design	Type	Page
on sub-base		
	GRP GRPO	182
for front panel mounting, with barbed fitting connection PK		
	GRP GRPO	182

Standard flow control valve with QS push-in fitting

Design	Type	Page
L-shaped outlet, slotted head screw		
	VFOC	183

One-way flow control valve with QS push-in fitting and adjustable pressure setting

Design	Type	Page
Precision adjustment via internal hex and setting of the ranges using a rotary switch		
	GRLSA	183

5.3.1 One-way flow control and flow control valves

Standard flow control valve with QS push-in connection, D series

Housing: Die-cast zinc



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
L-shaped outlet, slotted head screw					
GRLA	M5	3	A	100/100	★ 193137
		4		110/110	★ 193138
		6		115/110	★ 193139
	G ¹ / ₈	3		130/130	★ 193142
		4		160/190	★ 193143
		6		185/240	★ 193144
		8		215/250	★ 193145
	G ¹ / ₄	6		400/420	★ 193146
		8		475/500	★ 193147
		10		480/500	★ 193148
	G ³ / ₈	6		495/495	★ 193149
		8		820/850	★ 193150
		10		900/975	★ 193151
	G ¹ / ₂	12		1580/1605	★ 193152
GRLZ	M5	3	Z	100/100	★ 193153
		4		110/110	★ 193154
		6		115/110	★ 193155
	G ¹ / ₈	3		130/130	★ 193156
		4		160/190	★ 193157
		6		185/240	★ 193158
		8		215/250	★ 193159
L-shaped outlet, slotted head screw, for high flow rates					
GRLA	G ¹ / ₈	6	A	400/420	★ 537075
		8		475/500	★ 537076

1) A = exhaust air; Z = supply air, O = at both ends

2) Flow control direction/non-return direction

Tubing, with standard O.D. → 15

5.3.1 One-way flow control and flow control valves

Standard flow control valve with QS push-in connection, D series

Housing: Die-cast zinc



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
L-shaped outlet, knurled screw					
GRLA	M5	3	A	100/100	★ 197576
		4		110/110	★ 197577
		6		115/110	★ 197578
	G1/8	3		130/130	★ 197579
		4		160/190	★ 197580
		6		185/240	★ 197581
		8		215/250	★ 534337
	G1/4	6		400/420	★ 534338
		8		475/500	★ 534339
		10		480/500	★ 534340
	G3/8	6		495/495	★ 534341
		8		820/850	★ 534342
		10		900/975	★ 534343
	G1/2	12		1580/1605	★ 534344

Standard flow control valve with QS push-in connection, D series

Housing: Chromed metal



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
L-shaped outlet, slotted head screw					
GRLA-F	G1/8	4	A	180/188	195597
		6		255/280	195598
		8		275/307	195599
	G1/4	6		430/478	195600
		8		530/578	195601

1) A = exhaust air; Z = supply air, O = at both ends

2) Flow control direction/non-return direction

Tubing, with standard O.D. → 15

5.3.1 One-way flow control and flow control valves

Standard flow control valve with QS push-in connection, B series

Housing: Polybutylene terephthalate, reinforced



Type	Connection	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
L-shaped outlet, knurled screw					
GRLA	G ¹ / ₈	6	A	400/420	162965
		8		475/500	162966
	G ¹ / ₄	6		495/495	162967
		8		820/850	162968
	G ³ / ₈	6		900/975	162969
		8		1580/1605	162970

Standard flow control valve with QS push-in connection

Housing: Polyacetal



Type	Connection	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
L-shaped outlet, internal hex					
VFOF	G ¹ / ₈	6	A	250/260	1526931
	G ¹ / ₄	8		650/650	1505391

1) A = exhaust air; Z = supply air, O = at both ends

2) Flow control direction/non-return direction

Tubing, with standard O.D. → 15

5.3.1 One-way flow control and flow control valves

Mini flow control valve with QS push-in connection

Housing: Die-cast zinc



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
L-shaped outlet, slotted head screw					
GRLA	M3	3	A	41/50	175041
	M5	3		40/70	175053
		4		40/75	175056
GRLZ	M3	3	Z	41/44	175043
	M5	3		48/52	175055
		4		48/65	175058
GRLO	M3	3	O	41	175042
	M5	3		40	175054
		4		40	175057

Mini flow control valve with QS push-in connection

Housing: Die-cast zinc



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
Parallel outlet, slotted head screw					
GRGA	M3	3	A	41/50	175044
GRGZ	M3	3	Z	41/44	175046
GRGO	M3	3	O	41	175045

1) A = exhaust air; Z = supply air, O = at both ends

2) Flow control direction/non-return direction

Tubing, with standard O.D. → 15

5.3.1 One-way flow control and flow control valves

Standard flow control valve with female thread

Housing: Die-cast zinc



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
L-shaped outlet, slotted head screw					
GRLA	M5	M5	A	95/95	151160
	G1/8	G1/8		340/420	151165
	G1/4	G1/4		610/820	151172
	G3/8	G3/8		1450/1600	151178
	G1/2	G1/2		2100/2200	151179
	G3/4	G3/4		4320/4720	151180
GRLZ	M5	M5	Z	95/95	151183
	G1/8	G1/8		340/420	151188
	G1/4	G1/4		610/820	151195
GRLO	M5	M5	O	95	151181



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
L-shaped outlet, knurled screw					
GRLA	M5	M5	A	95/95	151163
	G1/8	G1/8		340/420	151169
	G1/4	G1/4		610/820	151175
GRLZ	M5	M5	Z	95/95	151186
	G1/8	G1/8		340/420	151192
	G1/4	G1/4		610/820	151198

1) A = exhaust air; Z = supply air, O = at both ends

2) Flow control direction/non-return direction

Tubing, with standard O.D. → 15

5.3.1 One-way flow control and flow control valves

Standard flow control valve with barbed fitting PK

Housing: Die-cast zinc



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
L-shaped outlet, slotted head screw					
GRLA	M5	3	A	83/83	151161
		4		83/88	151162
	G1/8	3 ¹⁾		110/110	151166
		4 ¹⁾		230/240	151167
		6 ¹⁾		300/290	151168
	G1/4	4 ¹⁾		260/260	151173
		6 ¹⁾		540/585	151174
GRLZ	M5	3	Z	83/83	151184
		4		83/88	151185
	G1/8	3		110/110	151189
		4		230/240	151190
		6		300/290	151191
	G1/4	4		260/260	151196
		6		540/585	151197
GRLO	M5	3	O	83	151182

1) via union nut

Mini flow control valve with female thread

Housing: Die-cast zinc



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
GRLA	M3	M3	A	18/20	175038
GRLZ	M3	M3	Z	18/20	175040
GRLO	M3	M3	O	18	175039

1) A = exhaust air; Z = supply air, O = at both ends

2) Flow control direction/non-return direction

Tubing, standard I.D. → 35

5.3.1 One-way flow control and flow control valves

Corrosion-resistant flow control valve with female thread

Housing: High-alloy stainless steel



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
CRGRLA	M5	M5	A	95/95	161403
	G ¹ / ₈	G ¹ / ₈		340/420	161404
	G ¹ / ₄	G ¹ / ₄		610/820	161405
	G ³ / ₈	G ³ / ₈		1450/1600	161406
	G ¹ / ₂	G ¹ / ₂		2100/2200	161407

Inline flow control valve with QS push-in connections

Housing: Polybutylene terephthalate, reinforced



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
GR	3	3	A/Z	25/70	193965
	4	4		85/110	193967
	4	4		40/110	193966
	6	6		75/270	193968
	6	6		160/270	193969
	8	8		225/400	193970
GRO	3	3	O	25	193971
	4	4		85	193972
	5	5		160	193973

Retainer

Polyacetal



Type	for valve with push-in connections	Part No.
GR-H-QS	QS-3/QS-4	195495
	QS-6/QS-8	195496

1) A = exhaust air; Z = supply air, O = at both ends

2) Flow control direction/non-return direction

Tubing, standard O.D. → 15

5.3.1 One-way flow control and flow control valves

Standard inline flow control valve with female thread

Housing: Wrought aluminium alloy (M3, M5, G¹/₈, GR-¹/₄),
die-cast zinc (GRA-¹/₄, G³/₈, G¹/₂, G³/₄)



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
GR	M3	M3	A/Z	29.5/27.5	15899
	M5	M5		94/115	151213
	G ¹ / ₈	G ¹ / ₈		220/217	151215
	G ¹ / ₄	G ¹ / ₄		370/150	2101
	G ³ / ₈	G ³ / ₈		1010/1150	6308
	G ¹ / ₂	G ¹ / ₂		1620/2760	3720
	G ³ / ₄	G ³ / ₄		3300/4800	2103
GRA	G ¹ / ₄	G ¹ / ₄		420/780	6509

1) A = exhaust air; Z = supply air, O = at both ends

2) Flow control direction/non-return direction

Tubing, with standard O.D. → 15

5.3.1 One-way flow control and flow control valves

Flow control/silencer combination

Threaded plug: Wrought aluminium alloy



Type	D1	qnN [l/min]	Part No.
Slotted head screw			
GRE	G1/8	520	10351
	G1/4	996	10352
	G3/8	2000	35310
	G1/2	3600	10353

Threaded plug: Nickel-plated brass



Type	D1	qnN [l/min]	Part No.
Knurled screw			
VFFK	M5	80	133140
	M7	100	133141
	R1/8	270	133142
	R1/4	420	133143

Housing, threaded plug: Die-cast aluminium



Type	D1	qnN [l/min]	Part No.
Slotted head screw			
GRU	G1/8	1000	9516
	G1/4	1500	9517
	G3/8	1700	9518
	G1/2	4000	9519
	G3/4	8000	9520

1) A = exhaust air; Z = supply air, O = at both ends

2) Flow control direction/non-return direction

Tubing, with standard O.D. → 15

5.3.1 One-way flow control and flow control valves

Precision flow control valve

Housing: Reinforced polyamide, sub-base: Wrought aluminium alloy, rotary knob: Reinforced polyamide



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
on sub-base					
GRP	G1/8	G1/8	A/Z	40.7/88	542022
				75.8/245	542023
GRPO			O	40.7	542024
				75.8	542025

Precision flow control valve

Rotary knob with scale

Rotary knob: Reinforced polyamide



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
for front panel mounting, with barbed fitting connection PK					
GRP	3	3	A/Z	3.8/95	12743
				40.7/88	10802
	4	4		75.8/245	12961
GRPO	3	3	O	3.8	13229
				40.7	10803
	4	4		75.8	13230

Mounting plate

for precision one-way flow control valve

Material: Polyamide



Type	Bore ø	Part No.
APL	22	10391
	2 x 22	10392

1) A = exhaust air; Z = supply air, O = at both ends

2) Flow control direction/non-return direction

Tubing, with standard O.D. → 15

5.3.1 One-way flow control and flow control valves

Standard flow control valve with QS push-in fitting

Housing: Die-cast zinc



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
L-shaped outlet, slotted head screw					
VFOC	4	4	Z	100/100	559723
	6	6		270/260	559724

One-way flow control valve with QS push-in fitting and adjustable pressure setting

Housing: Die-cast zinc



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
GRLSA	G $\frac{1}{8}$	6	A	250/310	540661
	G $\frac{1}{4}$	8	A	450/500	540662

1) A = exhaust air; Z = supply air, O = at both ends

2) Flow control direction/non-return direction

Tubing, with standard O.D. → 15





Save installation space, time and money!

Extremely innovative is one way of describing the new compact control valves from Festo for pneumatic drive solutions. Thanks to their improved design and the integration of several control functions in one component you can save valuable installation space. And gain more time and reliability during commissioning.

- GRXA-HG:
 - The function combination consists of a one-way flow control valve and a piloted non-return valve.
 - Stop function and speed setting in one housing
 - Swivel pilot connection 21 perpendicular to screw-in direction

5 Shut-off, pressure control and flow control valves

5.4 Functional combinations 185

- VFOF-LE-BAH:
 - One-way flow control valve for exhaust air (pneumatically controlled) with manual exhaust function
 - Over 50% saving on space: mounted directly on or very close to the drive
 - Energy- and environmentally friendly, thanks to lower compressed air losses and lower noise emissions
 - Integrates three functions: variable piston speeds, short intermediate stop and individual manual exhaust

Further information

➔ www.festo.com/catalogue

5.4 One-way flow control and flow control valves

Function combination



Type	D2	D1	Function ¹⁾	qnN [l/min] ³⁾	Part No.
With a piloted non-return valve Elbow outlet, slotted head screw Housing: Polyamide					
GRXA-HG	G1/8	4	A	130/140/140	525667
		6		140/165/160	525668
	G1/4	6		280/270/260	525669
		8		280/280/260	525670



Type	D2	D1	Function ¹⁾	qnN [l/min] ²⁾	Part No.
With an exhaust air one-way flow control function and a piloted non-return function, with manual exhaust function, minimal height, L-shaped outlet, internal hex Housing: Polybutylene terephthalate					
VFOF-LE-	G1/8	6	A	240/230	8001459
BAH	G1/4	8		590/540	1927030

1) A = exhaust air; Z = supply air, O = at both ends
2) Flow control direction/non-return direction
3) Flow control direction/non-return direction, unactuated/non-return direction
Tubing, with standard O.D. → 15



6	Couplings Selection aid	188
6.1	KD/KS, quick connection couplings shut-off at one end shut-off at both ends	
6.2	KD/KS, safety couplings	
6.3	MCK, union nuts	

All you need for fast, secure connections: couplings

Whether with quick connection couplings KD/KS or safety couplings KDS/KSS: quick and safe connections can be yours when and where you need them.

Festo's 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 making and releasing connections.

- Easy and safe
- Quick connection couplings KD/KS
- Safety couplings KDS and KSS, "S" for Safety
- Threads from M3 to G 1/2
- Wide range of connections: male and female thread, barbed fittings, fittings with union nut, bulkhead fittings

Further information

➔ www.festo.com/catalogue

6 Couplings Selection aid

Quick connection coupling

Design	Type	Page
Shut-off at one end		
	KD.../KS...	189
Shut-off at both ends		
	KD.../KS...	191

Safety coupling

Design	Type	Page
Shut-off at one end		
	KD.../KS...	189

Union nut

Design	Type	Page
for quick connector		
	MCK-PK-...	192

6.1 KD/KS, quick connection couplings shut-off at one end

Quick coupling socket



Type	Nom. size	Part No.
KD1-M3-A	1.5	151995



Type	Nom. size	Part No.
KD2-M5-A	2.7	4087
KD2-M5-I		531620
KD2-CK-3		531621
KD2-CK-4		531622
KD2-CN-4		531623
KD2-CN-4-S		531624



Type	Nom. size	Part No.
KD3-1/8-A	5	2142
KD3-1/4-A		531626
KD3-1/8-I		531627
KD3-1/4-I		531628
KD3-CK-4		531629
KD3-CK-6		531630
KD3-CN-6		531631
KD3-CN-6-S		531632

Quick coupling plug



Type	Nom. size	Part No.
KS1-CN-2	1.5	151996



Type	Nom. size	Part No.
KS2-M5-A	2.7	531658
KS2-M5-I		531660
KS2-CK-3		4091
KS2-CK-4		4090
KS2-CN-4		531663
KS2-CN-4-S		531664



Type	Nom. size	Part No.
KS3-1/8-A	5	3492
KS3-1/4-A		531666
KS3-1/8-I		531668
KS3-1/4-I		531669
KS3-CK-4		3326
KS3-CK-6		3478
KS3-CX-4		4047
KS3-CN-6		531672
KS3-CN-6-S		531673

**6.1 KD/KS, quick connection couplings
shut-off at one end**

Coupling socket



Type	Nom. size	Part No.
KD4-1/4-A	7.2	2143
KD4-3/8-A		2144
KD4-1/2-A		2145
KD4-1/4-I		531636
KD4-3/8-I		531637
KD4-1/2-I		531638
KD4-CK-6		531639
KD4-CK-9		531640
KD4-CK-9-S		531642
KD4-N-9		531641



Type	Nom. size	Part No.
KD5-1/2-I	13	4088

Quick coupling plug



Type	Nom. size	Part No.
KS4-1/4-A	7.2	2154
KS4-3/8-A		2155
KS4-1/2-A		531676
KS4-1/4-I		531678
KS4-3/8-I		531679
KS4-1/2-I		531680
KS4-CK-4		2150
KS4-CK-6		2151
KS4-CK-9		531683
KS4-CX-6		4048
KS4-CX-9		4049
KS4-CK-9-S		531686
KS4-N-6		2152
KS4-N-9		2153



Type	Nom. size	Part No.
KS5-1/2-A	13	531687
KS5-CK-13		4096
KS5-N-13		4089

6.1 KD/KS, quick connection couplings shut-off at both ends

Coupling socket



Type	Nom. size	Part No.
KD3-1/8-A-R	5	531659



Type	Nom. size	Part No.
KD4-1/4-A-R	7.2	531694

Quick coupling plug



Type	Nom. size	Part No.
KS3-1/8-A-R	5	531667



Type	Nom. size	Part No.
KS4-1/4-A-R	7.2	531677

6.2 KDMS/KDS/KSS, safety couplings shut-off at one end

Quick coupling socket



Type	Nom. size	Part No.
Steel design		
KDMS6-1/4-A	7.8	151776
KDMS6-3/8-A		151777
KDMS6-1/2-A		151778
Brass design		
KDS6-1/4-A	7.8	531647
KDS6-3/8-A		531648
KDS6-1/2-A		531649
KDS6-1/4-I		531650
KDS6-3/8-I		531651
KDS6-1/2-I		531652
KDS6-CK-9		531653
KDS6-CK-13		531654
KDS6-CK-9-S		531656
KDS6-N-9		531655

Quick coupling plug



Type	Nom. size	Part No.
Steel design		
KSS6-1/4-A	7.8	151779
KSS6-3/8-A		151780
KSS6-1/2-A		531693
KSS6-1/8-A		151781
KSS6-1/4-I		531695
KSS6-3/8-I		531696
KSS6-1/2-I		531697
KSS6-CK-9		531698
KSS6-CK-13		531699
KSS6-CK-9-S		531701
KSS6-N-9		531700

Union nut

for quick connector



Type	Part No.
MCK-PK-3-KD	533672
MCK-PK-4-KD	533673
MCK-PK-6-KD	533674
MCK-PK-9-KD	533675
MCK-PK-13-KD	533676



7 Distributors

7.1 FR, distribution manifold

Selection aid 194

Distributors

The following pages contain all the important information you will need to order tried-and-tested aluminium FR distribution manifolds.

The broad selection of multiple distributors with push-in fittings is detailed in Section 3.1.2.2.

Further information

➔ www.festo.com/catalogue

7.1 Distribution manifolds

Selection aid

Design	Type	Page
4 connections		
	FR-4	195
8 connections		
	FR-8	195
9 connections		
	FR-9	195
12 connections		
	FR-12	195

7.1 FR, distribution manifolds

Distribution manifold

1 supply line

4 outlets



Type	Supply	Outlet	Part No.
FR-4	G $\frac{1}{8}$	G $\frac{1}{8}$	6701
	G $\frac{1}{4}$	G $\frac{1}{4}$	7849
	G $\frac{3}{8}$	G $\frac{3}{8}$	6703
	G $\frac{1}{2}$	G $\frac{1}{2}$	6704

Distribution manifold

2 supply lines

8 outlets



Type	Supply	Outlet	Part No.
FR-8	G $\frac{3}{8}$	G $\frac{1}{8}$	2077
	G $\frac{1}{2}$	G $\frac{1}{4}$	2078
	G $\frac{3}{4}$	G $\frac{1}{2}$	6411

Distribution manifold

1 supply line

9 outlets



Type	Supply	Outlet	Part No.
FR-9	G $\frac{1}{8}$	M3	30981

Distribution manifold

2 supply lines

12 outlets



Type	Supply	Outlet	Part No.
FR-12	G $\frac{1}{8}$	M5	4525





8 Rotary distributors

Completely flexible media supply and return

Whether it's compressed air, vacuum, liquids or gases – the single and multiple rotary distributors GF from Festo guarantee the secure transmission of media from stationary sources to rotating machine parts.

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

Further information

➔ www.festo.com/catalogue

Rotary distributor

Single



Type	D1	D2	Part No.
GF	G1/8	M5	539290
	G1/4	G1/8	539291
	G1/2	G1/4	539292

Rotary distributor

Double



Type	D1	n	Part No.
GF	G1/8	2	539287
	G1/4	2	539288
	G1/2	2	539289

9 Pressure gauges



9.1 Pressure gauge Selection aid 200

Festo pressure gauge for every application:

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

- Easy installation
- Various scales (bar/psi/MPa)
- Rapid pressure monitoring thanks to the red-green pressure gauge

Further information
➔ www.festo.com/catalogue

9.1 Pressure gauge Selection aid

Pressure gauge

Design	Type	Page
Pressure gauge to DIN EN 837-1		
	MA-...-EN	201
Pressure gauge to DIN EN 837-1, with red-green range		
	MA-...-RG	201
Pressure gauge		
	MA	202
Precision pressure gauge to DIN EN 837-1		
	MAP-...-EN	203
Pressure gauge with QS fitting		
	MA-...-QS	203

Flanged pressure gauge

Design	Type	Page
Flanged pressure gauge to DIN EN 837-1		
	FMA-...-EN	204
Flanged pressure gauge		
	FMA	204
Precision flanged pressure gauge to DIN EN 837-1		
	FMAP-...-EN	204

9.1. Pressure gauge

MA-...-EN



Type	Nominal size	Indicating range			D1	Part No.
		[bar]	[MPa]	[psi]		
MA-...-EN	40	0 ... 10	—	0 ... 145	R $\frac{1}{8}$	162835
		0 ... 16	—	0 ... 232	R $\frac{1}{4}$	162836
		0 ... 25	—	0 ... 360		526167
		0 ... 6	—	0 ... 87		187078
		0 ... 10	—	0 ... 145	R $\frac{1}{4}$	187079
		0 ... 16	—	0 ... 232		187080
		0 ... 6	—	0 ... 87	G $\frac{1}{4}$	183899
		0 ... 10	—	0 ... 145		183900
		0 ... 16	—	0 ... 232		183901
		0 ... 25	—	0 ... 360		183902
	50	0 ... 2.5	—	0 ... 36	G $\frac{1}{4}$	162837
		0 ... 10	—	0 ... 145		162838
		0 ... 16	—	0 ... 232		162839
	63	0 ... 1	—	0 ... 14.5	G $\frac{1}{4}$	162844

MA-...-RG



Type	Nominal size	Indicating range			D1	Part No.
		[bar]	[MPa]	[psi]		
MA-...-RG	40	0 ... 10	—	—	R $\frac{1}{8}$	525725
		0 ... 16	—	—		525726
		—	0 ... 1	—		526778
		—	0 ... 1.6	—		526779
		—	—	0 ... 145		526786
		—	—	0 ... 232		526787
		—	—	—		—

9.1. Pressure gauge

MA-...-RG



Type	Nominal size	Indicating range			D1	Part No.
		[bar]	[MPa]	[psi]		
MA-...-RG	50	0 ... 2.5	–	–	R $\frac{1}{4}$	525727
		0 ... 10	–	–		525728
		0 ... 16	–	–		525729
		–	0 ... 0.25	–		526780
		–	0 ... 1	–		526781
		–	0 ... 1.6	–		526782
		–	–	0 ... 36		526788
		–	–	0 ... 145		526789
		–	–	0 ... 232		526790

MA



Type	Nominal size	Indicating range			D1	Part No.
		[bar]	[MPa]	[psi]		
MA	23	0 ... 6	–	0 ... 87	R $\frac{1}{8}$	183896
		0 ... 10	–	0 ... 145		183897
		0 ... 16	–	0 ... 232		183898
	27	0 ... 10	–	0 ... 145	R $\frac{1}{8}$	541733
		0 ... 16	–	0 ... 232		541734
		0 ... 10	–	–	M5	526323
		–	0 ... 1	–		526324
		–	–	0 ... 160		527405

9.1. Pressure gauge

MA



Type	Nominal size	Indicating range			D1	Part No.
		[bar]	[MPa]	[psi]		
MA	40	0 ... 10	–	0 ... 145	G $\frac{1}{8}$	359874
		0 ... 16	–	0 ... 232		345395
		–	0 ... 1	–		192732
		–	0 ... 1.6	–		192733
	50	0 ... 10	–	0 ... 145	G $\frac{1}{4}$	359873
		0 ... 16	–	0 ... 232		356759
		–	0 ... 1	–		192734
		–	0 ... 1.6	–		192735
	63	0 ... 0.25	–	0 ... 3.6	G $\frac{1}{4}$	7169

MAP-...-EN



Type	Nominal size	Indicating range			D1	Part No.
		[bar]	[MPa]	[psi]		
MAP-...-EN	40	0 ... 1	–	0 ... 15	R $\frac{1}{8}$	161126
		0 ... 4	–	0 ... 58		162842
		0 ... 6	–	0 ... 87		161127
		0 ... 16	–	0 ... 232		161128

MA-...-QS



Type	Nominal size	Indicating range			D1	Part No.
		[bar]	[MPa]	[psi]		
MA-...-QS	15	0 ... 8	–	–	QS-4	153383
					QS-6	153384
					QS-8	183385

9.1. Pressure gauge

FMA-...-EN



Type	Nominal size	Indicating range			D1	Part No.
		[bar]	[MPa]	[psi]		
FMA-...-EN	40	0 ... 10	–	0 ... 145	G $\frac{1}{4}$	159596
		0 ... 16	–	0 ... 232		159597
	50	0 ... 2.5	–	0 ... 36	G $\frac{1}{4}$	159598
		0 ... 10	–	0 ... 145		159599
		0 ... 16	–	0 ... 232		159600
	63	0 ... 2.5	–	0 ... 36	G $\frac{1}{4}$	159601
		0 ... 10	–	0 ... 145		159602
		0 ... 16	–	0 ... 232		159603

FMA



Type	Nominal size	Indicating range			D1	Part No.
		[bar]	[MPa]	[psi]		
FMA	63	0 ... 0.25	–	0 ... 3.6	G $\frac{1}{4}$	225783

FMAP-...-EN



Type	Nominal size	Indicating range			D1	Part No.
		[bar]	[MPa]	[psi]		
FMAP	63	0 ... 1	–	0 ... 15	G $\frac{1}{4}$	161129
		0 ... 4	–	0 ... 58		162843
		0 ... 6	–	0 ... 87		161130
		0 ... 16	–	0 ... 232		161131

10 Accessories

With Festo, you don't need a magnifying glass to find accessories

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 through – to ensure you have everything you need for speedy installation.

- Sealing material
- Cutting tools for tubing
- Tubing strap
- Silencer
- Silencer LFU
- Air guns

Further information

➔ www.festo.com/catalogue

10 Accessories

Sealing material

Sealing ring



Type	for thread	Part No.
Polyvinyl chloride		
O	M3	30290
	M5	3565
	G $\frac{1}{8}$	2223
	G $\frac{1}{4}$	2224
	G $\frac{3}{8}$	2225
	G $\frac{1}{2}$	2226
	G $\frac{3}{4}$	2227
	G1	210893
Polyvinylidenefluoride		
CRO	M5	165191
	G $\frac{1}{8}$	575895
	G $\frac{1}{4}$	165193
	G $\frac{3}{8}$	165194
	G $\frac{1}{2}$	165195
	G $\frac{3}{4}$	165196
	G1	165197

Sealing ring

with metal housing



Type	for thread	Part No.
Stainless steel, nitrile rubber		
OL	M5	34634
	M6	161180
	M10	161181
	M12	161182
	M14	161183
	M16	165298
	M22	165299
	G $\frac{1}{8}$	33840
	G $\frac{1}{4}$	34635
Aluminium, nitrile rubber		
OL	G $\frac{3}{8}$	34636
	G $\frac{1}{2}$	34637
	G $\frac{3}{4}$	34638

Sealing ring

for fittings NPCK



Type	for thread	Part No.
polyetheretherketoneP		
NPAS	G $\frac{1}{8}$	2652516
	G $\frac{1}{4}$	2652517
	G $\frac{3}{8}$	2652519

10 Accessories

Sealing material

Sealing ring

with support ring



Type	for thread	Part No.
Stainless steel, nitrile rubber		
OK	M3	130949
	M5	130850
	M7	130851
Polyamide, thermoplastic polyurethane		
OK	G1/8	531771
	G1/4	531772
	G3/8	531773
	G1/2	531774
	G3/4	531775

Thread sealing tape



Type	Part No.
GWB-0,1	9076

Sealing ring assortment



Type	for thread	Quantity	Part No.
OL	M5	50	161355
	G1/8	100	
	G1/4	100	
	G3/8	40	
	G1/2	30	
	G3/4	10	
OK	M3	50	570465
	M5	100	
	M7	50	
	G1/8	100	
	G1/4	100	
	G3/8	40	
	G1/2	30	
	G3/4	10	

10 Accessories

Connecting/disconnecting tools for tubing

Tubing cutter

for flame-retardant tubing
PAN-V0



Type	for D1	Part No.
PAN-V0S	6	160554
	8	
	10	160555
	12	

Disconnecting pliers

for removing plastic tubing PP-3, PU-3, PP-4 and PU-4 from
barbed nipples



Type	Part No.
ZDS-PK3	9090
ZDS-PK-4	9522

Connecting pliers

for connecting plastic tubing
PP-3, PU-3, PP-4 and PU-4 to
barbed nipples



Type	Part No.
ZMS-PK-3/4	9341

Pipe cutter ZR

for plastic pipes PQ-PA
up to O.D. 28 mm



Type	Part No.
ZR	194592

10 Accessories

Connecting/disconnecting tools for tubing

Pipe and tubing cutter ZRS

for plastic tubing with and without fabric reinforcement
up to O.D. 20 mm



Type	Part No.
ZRS	7658



Type	Quantity	Part No.
Spare blades		
ZRS	10	218606

Tubing strap



Type	Bundle Ø [mm]	Part No.
PB	30	6741
	45	6742
	100	6743

Tubing support NPAW



Type	Size	Part No.
NPAW-S-T3	small	554026
NPAW-S-T4	middle	554027
NPAW-S-T6	large	554028

10 Accessories

Silencers

Silencer U



Type	D1	Part No.
Polymer		
U-1/8	G1/8	2307
U-1/4	G1/4	2316
U-3/8	G3/8	2309
U-1/2	G1/2	2310
U-3/4	G3/4	2311
U-1	G1	2312
Die-cast metal		
U-1/8-B	G1/8	6841
U-1/4-B	G1/4	6842
U-3/8-B	G3/8	6843
U-1/2-B	G1/2	6844
U-3/4-B	G3/4	6845
U-1-B	G1	151990

Silencer UC-QS

with push-in sleeve for push-in fitting QS



Type	D1	Part No.
Polyethylene		
UC-QS-3H	3	165005
UC-QS-4H	4	165006
UC-QS-6H	6	165007
UC-QS-8H	8	175611
UC-QS-10H	10	526475

Silencer UC



Type	D1	Part No.
Polyethylene		
UC-M5	M5	165003
UC-M7	M7	161418
UC-1/8	G1/8	161419
UC-1/4	G1/4	165004
UC-3/8	G3/8	1707427

Filter silencer LFU

Input pressure 0 ... 16 bar



Type	D1	Part No.
LFU-1/4	G1/4	539132
LFU-3/8	G3/8	539133
LFU-1/2	G1/2	10494
LFU-1	G1	10495

10 Accessories

Silencers

Silencer AMTE

Short design



Type	D1	Part No.
Metal		
AMTE-M-H	M5	1206621
AMTE-M-H	G1/8	1206622
	G1/4	1206623
	G3/8	1206624
	G1/2	1206625

Silencer AMTE

Long design, NPT



Type	D1	Part No.
Metal		
AMTE-M-LH	UNF10-32	1206994
AMTE-M-LH	NPT1/8-27	1206989
	NPT1/4-18	1206990
	NPT3/8-18	1206991
	NPT1/2-14	1206992

Silencer AMTE

Long design



Type	D1	Part No.
Metal		
AMTE-M-LH	M3	1231120
	M5	1205858
AMTE-M-LH	G1/8	1205860
	G1/4	1205861
	G3/8	1205862
	G1/2	1205863
	G3/4	1205864
	G1	1205865

10 Accessories

Air guns

Low consumption air guns LSP

Precise, infinitely variable flow metering



Type	D1	Part No.
Wrought aluminium alloy		
LSP-1/4-D	G1/4	35528



Type	D1	Part No.
Reinforced polyamide		
LSP-1/4-C	G1/4	184318

Air gun nozzle LPZ-SD

with safety shield



Type	D1	Part No.
Aluminium		
LPZ-SD	M12x1.25	184321

Air gun nozzle LPZ-LD

with noise reduction



Type	D1	Part No.
Chrome plated die-cast zinc, aluminium		
LPZ-LD	M12x1.25	184322

Air gun nozzle LPZ-RG

with straight tube



Type	D1	Part No.
Nickel-plated brass		
LPZ-RG-150-B	M12x1.25	565317

Air gun nozzle LPZ-RB

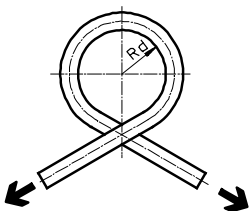
with elbow tube



Type	D1	Part No.
Nickel-plated brass		
LPZ-RB-150-B	M12x1.25	565316

Measuring methods

Flow-relevant bending radius
 R_d



The tubing is bent in the direction of its inherent flexion until a 5% flattening of the tubing O.D. occurs.

The R_d is then calculated. There is no reduction in the flowrate up until the R_d is reached

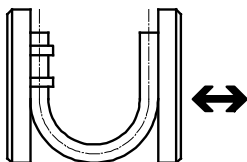


Cross section flattened as a result of bended tubing

d = non deformed tubing OD

d_1 = deformed tubing OD

Minimum bending radius
 R_{min}



The tubing attached to a movable plate is bent until the deformation results in a kink. The measured value is the minimum bending radius R_{min} . This R_{min} leads to considerable reductions in flow.

Be sure to select the correct tubing connector when installing an application.

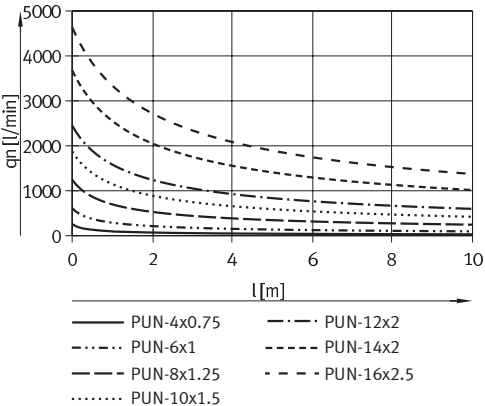
The available cross-section from the air preparation unit to the valve should be as wide as possible to ensure maximum air supply. This does not result in any loss of air. For the application, on the other hand, the tube cross-section from the valve to the drive should be kept as small as possible to keep air consumption to a minimum. The appropriate tube diameter depends on the amount of air required by the application.

Select the shortest possible tubes to ensure that the required volume is not lost along the tube length. The diagram opposite uses a Festo tubing/fitting combination (QS and PUN) to illustrate how the volumetric flow rate decreases the longer the tube length is.

Festo push-in fittings do not restrict the nominal diameter of the 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 (qn) as a function of tube length (l)
PUN (P1 = 6 bar, P2 = 5 bar)



Electronic catalogue and sizing software

The electronic catalogue enables you to find the required product quickly and easily. Use the integrated product configurator to select the necessary technical features step by step. This will ensure that the suggested product fulfils your design specifications. Coloured markings and symbols provide assistance and guidance during selection. The graphics for complex products adapt them-

selves dynamically to your design. All further information relating to a particular product, such as the CAD data, accessories or documentation, can later be accessed via the menu. To facilitate repeated ordering of frequently required components, you can save your design as a favourite, or place it directly in the shopping basket.

➔ www.festo.com/catalogue

Air Consumption

Quickly and conveniently determine your system's air consumption. Simply capture all drives and hoses, set cycle times and working pressure and the air consumption is already calculated per minute

and per day. The input table and results can be exported directly to Excel.

➔ www.festo.com/catalogue
➤ Engineering

Cylinder Air Consumption

Operating mode

☒ single acting, pulling



Number of cycles

60

1/min

Size

32 mm

Stroke/Length

100

mm

NOTE: Using estimated piston rod diameter of 12 mm.

☐ Energy Saving

Turn on energy saving to differentiate between working stroke and return stroke.

Inside tubing diameter

2 mm

Length

100

mm

Clear table

Print

Add

Selected cylinders and their air consumption

Op. Mode	Size	Stroke/Length	Pressure	Number of cycles	Air Consumption	
	(mm)	(mm)		(1/min)	per Cycle(l)	per Minute(l)

Utilization

Working pressure

0

bar

Working hours per day

0

h

Working days per year

200

d

Air Consumption

per Minute

0

m³

per day

0

m³

per Year

0

m³

Energy Costs

Currency

€

Price

0.02

€/m³

per day

€

NOTE: The air consumption values determined in this way are only guide values. Particularly with high cycle speeds, pressurised chambers are not fully exhausted, which means that actual air consumption may be significantly lower.

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