

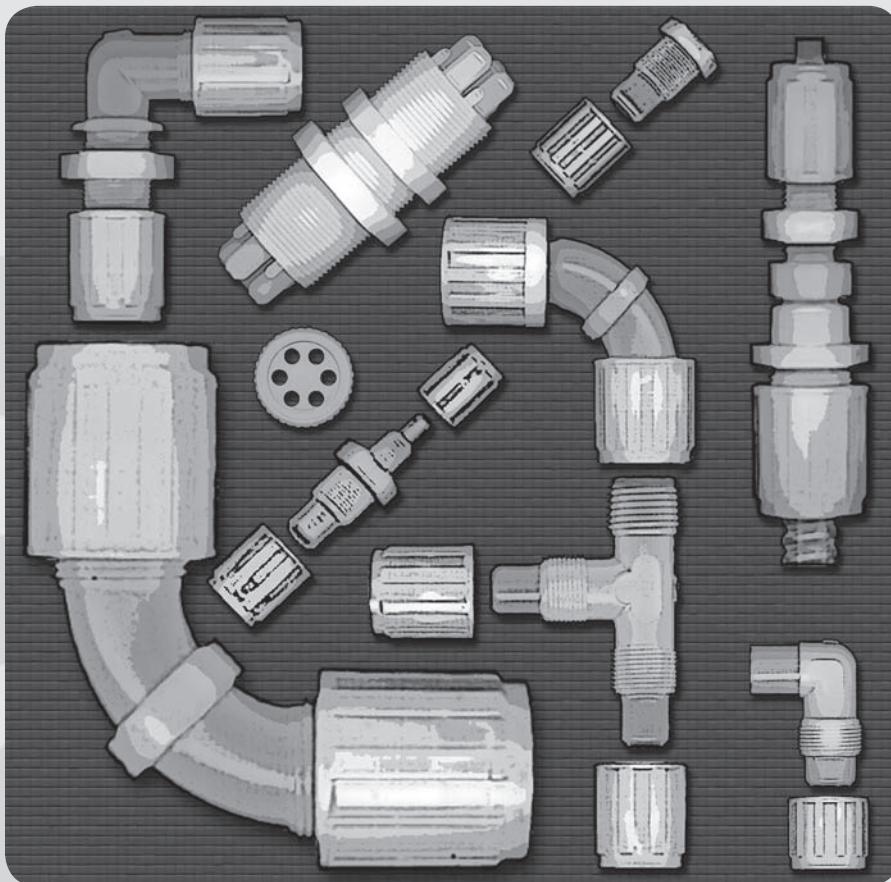
ChemGrip™ Technical

PDF Published April 1, 2015

ChemGrip™ Tube & Fittings	Page
PFA tube	2
Technical Specifications	3
Tube Fittings	
Male & Female Connectors	4
Straight Unions	5
Elbows	6
Tees	7-8
Caps, Nuts & Grippers	9
Ferrules & Plugs	10

PFA Fluid Handling System

ChemGrip™ PFA Tube & Fittings



CHEMLINE  **PLASTICS**
SUPERIOR FLOW SOLUTIONS

ISO 9001:2008 Certified

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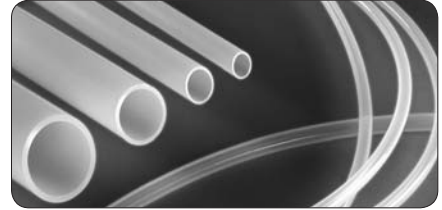
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PFA Tubing



Technical



Chemline PFA (perfluoroalkoxy) is the Teflon tubing of choice for applications involving extreme chemical resistance combined with high temperature exposure. PFA tubing is made exclusively from the highest molecular weight resin available giving it superior physical properties. PFA tubing is suitable for even the most demanding applications.

Industrial Grade PFA Tube – Imperial

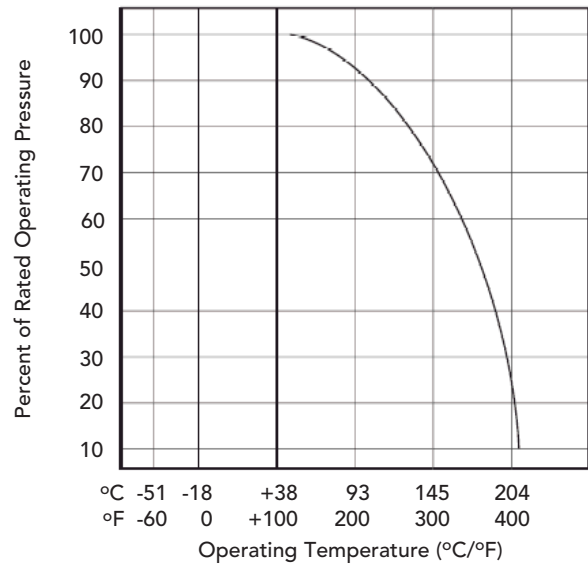
Item No.	Tube O.D.	Wall Thickness	Bend Radius	Working Pressure psi @ 22°C(72°F)
TT094-030	3/32"	0.030"	"	449
TT125-030	1/8"	0.030"	1/2"	449
TT156-030	5/32"	0.030"	1/2"	360
TT187-030	3/16"	0.030"	3/4"	299
TT187-062	3/16"	0.062"	1/2"	617
TT250-030	1/4"	0.030"	1"	225
TT250-040		0.040"	1"	300
TT250-047		0.047"	3/4"	352
TT250-062		0.062"	1/2"	464
TT312-030	5/16"	0.030"	1-3/4"	179
TT312-062		0.062"	1"	371
TT375-030	3/8"	0.030"	2-1/2"	150
TT375-062		0.062"	1"	310
TT438-030	7/16"	0.030"	3-1/2"	128
TT438-062		0.062"	2"	265
TT500-030	1/2"	0.030"	4"	112
TT500-062		0.062"	2"	232
TT750-062	3/4"	0.062"	6"	155
TT1000-062	1"	0.062"	22"	116

Industrial Grade PFA Tube – Metric

Item No.	Tube O.D.	Wall Thickness	Bend Radius	Working Pressure psi @ 22°C(72°F)
TT4m1.0m	4mm	1mm	1-1/2"	468
TT6m1.0m	6mm	1mm	1-3/4"	312
TT8m1.0m	8mm	1mm	2-1/2"	234
TT10m1.0m	10mm	1mm	2-3/4"	187
TT12m1.0m	12mm	1mm	4"	156

For high purity tubing, add -HP after the above item number

pressure vs. temperature



Warning: Not for use in applications exceeding 120°C (248°F)

Vacuum Service

Chemline recommends using 0.062" wall tubing at ambient temperature, with minimum bends for service down to -7.5 psi of vacuum.

PFA features

- 100% virgin grade high performance resins used to resist stress cracking
- Chemically inert to nearly all industrial chemicals and solvents
- Higher thermal stability than with FEP
- Lower permeability than with FEP
- Translucent
- Moisture absorption nearly zero
- FDA compliant for food contact
- Non-flammable
- Tubing is suitable for use with flare or conventional fittings
- Tubing is available in coiled hose and convoluted constructions
- Low permeation PFA tubing and pipe are also available
- Semiconductor grade PFA is also available

PFA specifications

- General: Chemline PFA meets or exceeds the requirements listed in ASTM D 6867-03
- Temperature: -300°F to 500°F
- Flammability: UL 94 VO rated. Chemline PFA tubing resists combustion and does not promote flame spread
- FDA: Chemline PFA is approved for the use in food contact applications in compliance with FDA regulation: 21 CFR 177.1550
- USP Class VI: Chemline PFA tubing meets the requirements of USP Class VI

PFA applications

- Chemical process
- Heat exchangers
- Laboratory applications
- Semiconductor
- Flow monitoring
- Emissions monitoring
- Double containment systems
- Food processing
- Electrical insulation
- Automotive hose
- Automotive paint spray
- Sodium Bisulfite and Sodium Hypochlorite chemical feed systems

PFA physical properties

Upper Service Temperature
 Specific Gravity
 Tensile Strength
 Elongation
 Flex Modulus
 MIT Flex Life
 Hardness

ASTM test

D 792
 D 1708
 D 638
 D 790
 D 2176
 D 2240

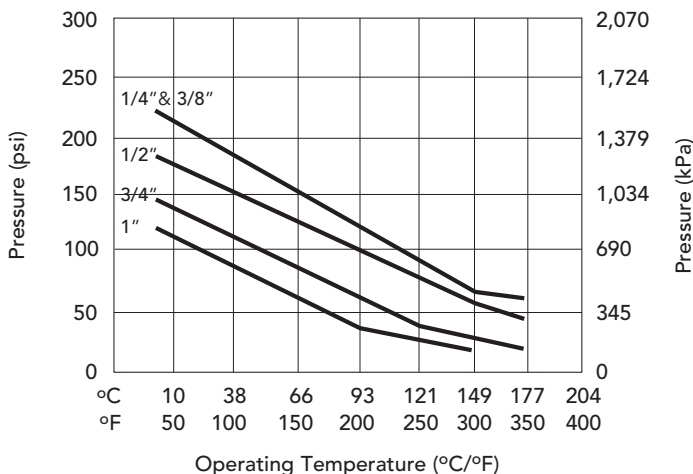
values

260°C (500°F)
 2.15
 4200 PSI
 400 %
 90,000 PSI
 500,000+
 60 Shore D

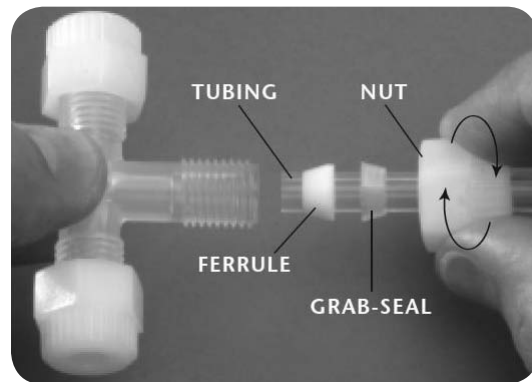
ChemGrip™ PFA Fittings

pressure vs. temperature

Pressure ratings based on 0.047" wall for 1/4" fittings and 0.062" wall for 3/8", 1/2", 3/4" and 1".



Warning: Not for use in applications exceeding 120°C (248°F).



fitting installation

1. Cut tubing to desired length
2. Loosen the nut, insert tube (your pre-assembled fitting should be ready for use)
3. Tighten the nut finger tight
4. Your fitting is now ready for use

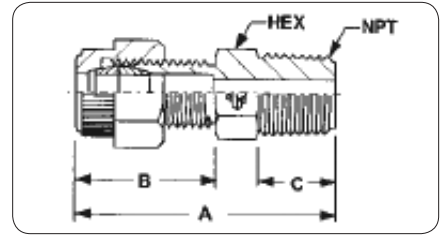
No tools are required, but if you decide to use a mechanical device to tighten it, rotate the nut no more than 1/2 turn past finger tight.

recommended nut torque setting

Tube O.D.	Wall Thickness (in.)	Minimum Torque (in.-lb.)	Maximum Torque (in.-lb.)
1/4"	0.030	6	10
1/4"	0.047	6	11
3/8"	0.030	7	10
3/8"	0.062	9	18
1/2"	0.062	12	23
3/4"	0.062	20	30
1"	0.062	30	48

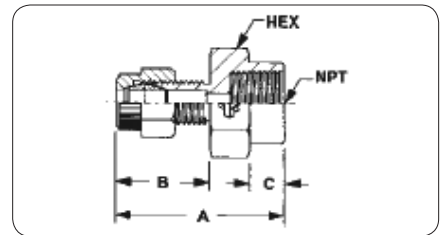
ChemGrip™ PFA Fittings

Grip Fittings



Male Connector Inches

Item No.	Tube	MNPT	Orifice	A	B	C	HEX
CG-MC2-2N-1	1/8"	1/8"	0.09	1.40	0.73	0.40	7/16"
CG-MC2-4N-1	1/8"	1/4"	0.09	1.50	0.73	0.50	1/2"
CG-MC4-2N-1	1/4"	1/8"	0.19	1.47	0.80	0.40	7/16"
CG-MC4-4N-1	1/4"	1/4"	0.19	1.58	0.81	0.50	1/2"
CG-MC4-6N-1	1/4"	3/8"	0.19	1.67	0.80	0.50	11/16"
CG-MC4-8N-1	1/4"	1/2"	0.19	1.80	0.80	0.63	7/8"
CG-MC6-2N-1	3/8"	1/8"	0.19	1.61	0.84	0.40	11/16"
CG-MC6-4N-1	3/8"	1/4"	0.31	1.71	0.84	0.50	11/16"
CG-MC6-6N-1	3/8"	3/8"	0.31	1.71	0.84	0.50	11/16"
CG-MC6-8N-1	3/8"	1/2"	0.31	1.84	0.84	0.63	7/8"
CG-MC8-4N-1	1/2"	1/4"	0.29	1.81	0.94	0.50	7/8"
CG-MC8-6N-1	1/2"	3/8"	0.42	1.81	0.94	0.50	7/8"
CG-MC8-8N-1	1/2"	1/2"	0.46	1.95	0.94	0.64	7/8"
CG-MC8-12N-1	1/2"	3/4"	0.46	2.18	0.88	0.80	1-1/8"
CG-MC12-8N-1	3/4"	1/2"	0.46	2.21	1.07	0.64	1-3/8"
CG-MC12-12N-1	3/4"	3/4"	0.68	2.34	1.04	0.80	1-3/8"
CG-MC12-16N-1	3/4"	1"	0.68	2.51	1.07	0.94	1-3/8"
CG-MC16-12N-1	1"	3/4"	0.75	2.48	1.18	0.80	1-3/8"
CG-MC16-16N-1	1"	1"	0.94	2.62	1.18	0.94	1-3/8"



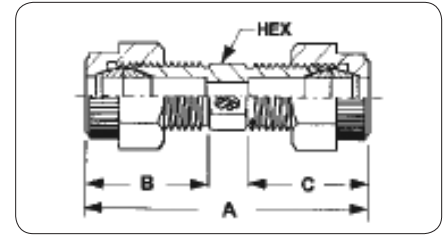
Female Connector Inches

Item No.	Tube	FNPT	Orifice	A	B	C	HEX
CG-FC4-2N-1	1/4"	1/8"	0.19	1.38	0.80	0.31	9/16"
CG-FC4-4N-1	1/4"	1/4"	0.19	1.52	0.80	0.34	15/16"
CG-FC4-6N-1	1/4"	3/8"	0.19	1.48	0.80	0.31	1"
CG-FC4-8N-1	1/4"	1/2"	0.19	1.57	0.80	0.40	1-1/8"
CG-FC6-2N-1	3/8"	1/8"	0.25	1.52	0.84	0.31	11/16"
CG-FC6-4N-1	3/8"	1/4"	0.31	1.53	0.84	0.32	15/16"
CG-FC6-6N-1	3/8"	3/8"	0.31	1.52	0.84	0.31	1"
CG-FC6-8N-1	3/8"	1/2"	0.31	1.61	0.84	0.40	1-1/8"
CG-FC8-4N-1	1/2"	1/4"	0.31	1.61	0.94	0.30	7/8"
CG-FC8-6N-1	1/2"	3/8"	0.45	1.63	0.94	0.32	1-1/8"
CG-FC8-8N-1	1/2"	1/2"	0.46	1.73	0.94	0.42	1-1/8"
CG-FC8-12N-1	1/2"	3/4"	0.46	1.82	0.94	0.38	1-3/8"
CG-FC12-8N-1	3/4"	1/2"	0.50	1.97	1.07	0.40	1-3/8"
CG-FC12-12N-1	3/4"	3/4"	0.69	2.00	1.10	0.40	1-5/8"
CG-FC12-16N-1	3/4"	1"	0.69	2.20	1.07	0.63	1-3/4"
CG-FC16-16N-1	1"	1"	0.94	2.30	1.18	0.62	1-3/4"

ChemGrip™ PFA Fittings

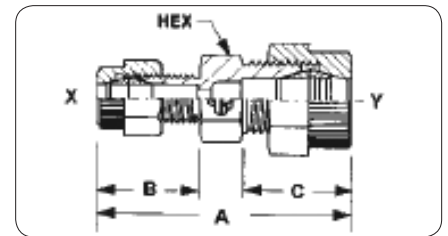


Grip Fittings



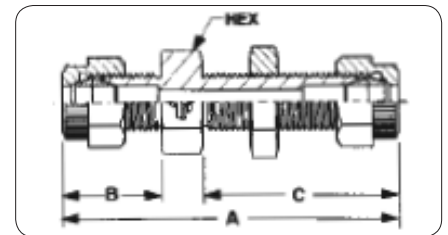
Straight Union Inches

Item No.	Tube	Tube	Orifice	A	B	C	HEX
CG-SU22N-1	1/8"	1/8"	0.09	1.84	0.73	0.73	3/8"
CG-SU44N-1	1/4"	1/4"	0.19	1.87	0.80	0.80	3/8"
CG-SU66N-1	3/8"	3/8"	0.31	2.05	0.84	0.84	11/16"
CG-SU88N-1	1/2"	1/2"	0.44	2.23	0.93	0.93	7/8"
CG-SU1212N-1	3/4"	3/4"	0.69	2.64	1.07	1.07	1-3/8"
CG-SU1616N-1	1"	1"	0.94	2.86	1.18	1.18	1-3/8"



Straight Union Reducer Inches

Item No.	Tube	Tube	Orifice	A	B	C	HEX
CG-SU42N-1	1/4"	1/8"	0.09	1.80	0.81	0.73	3/8"
CG-SU64N-1	3/8"	1/4"	0.19	2.01	0.84	0.80	11/16"
CG-SU82N-1	1/8"	1/2"	0.09	1.95	0.94	0.73	15/16"
CG-SU84N-1	1/2"	1/4"	0.19	2.11	0.94	0.80	7/8"
CG-SU86N-1	1/2"	3/8"	0.31	2.15	1.94	0.84	7/8"
CG-SU128N-1	3/4"	1/2"	0.70	2.51	1.07	0.94	1-3/8"
CG-SU812N-1	3/4"	1/2"	0.70	2.51	0.94	1.07	1-3/8"
CG-SU1612N-1	1"	3/4"	0.69	2.75	1.18	1.07	1-3/8"

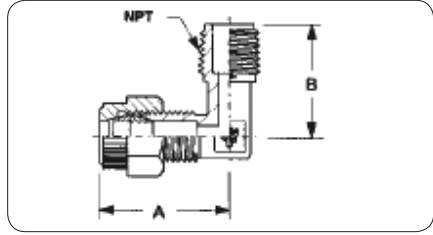


Straight Union Panel Mount Inches

Item No.	Tube	Tube	Orifice	A	B	C	HEX
CG-SPM22N-1	1/8"	1/8"	0.09	2.80	0.73	1.69	9/16"
CG-SPM44N-1	1/4"	1/4"	0.19	2.92	0.80	1.75	11/16"
CG-SPM66N-1	3/8"	3/8"	0.31	3.04	0.84	1.83	15/16"
CG-SPM88N-1	1/2"	1/2"	0.44	3.16	0.93	1.86	1-1/8"
CG-SPM1212N-1	3/4"	3/4"	0.69	3.65	1.07	2.08	1-3/8"
CG-SPM1616N-1	1"	1"	0.94	3.86	1.18	2.18	1-1/2"

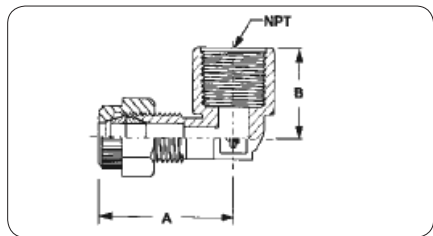
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Male Elbow Inches

Item No.	Tube	MNPT	Orifice	A	B
CG-ME2-2N-1	1/8"	1/8"	0.09	0.73	0.72
CG-ME2-4N-1	1/8"	1/4"	0.09	0.99	0.78
CG-ME4-2N-1	1/4"	1/8"	0.19	1.05	0.71
CG-ME4-4N-1	1/4"	1/4"	0.19	1.05	0.97
CG-ME4-6N-1	1/4"	3/8"	0.19	1.16	0.85
CG-ME6-2N-1	3/8"	1/8"	0.19	1.19	0.85
CG-ME6-4N-1	3/8"	1/4"	0.31	1.19	0.95
CG-ME6-6N-1	3/8"	3/8"	0.31	1.18	1.05
CG-ME6-8N-1	3/8"	1/2"	0.31	1.28	1.13
CG-ME8-4N-1	1/2"	1/4"	0.31	1.28	1.13
CG-ME8-6N-1	1/2"	3/8"	0.42	1.28	1.13
CG-ME8-8N-1	1/2"	1/2"	0.46	1.36	1.13
CG-ME8-12N-1	1/2"	3/4"	0.46	1.57	1.50
CG-ME12-8N-1	3/4"	1/2"	0.50	1.64	1.38
CG-ME12-12N-1	3/4"	3/4"	0.68	1.65	1.50
CG-ME12-16N-1	3/4"	1"	0.68	1.83	1.75
CG-ME16-12N-1	1"	3/4"	0.75	2.05	1.75
CG-ME16-16N-1	1"	1"	0.94	2.05	1.88

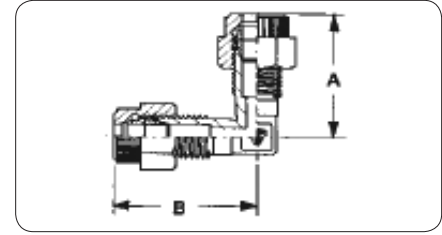
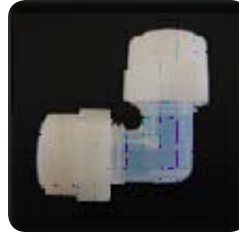


Female Elbow Inches

Item No.	Tube	FNPT	Orifice	A	B
CG-FE4-4N-1	1/4"	1/4"	0.09	1.27	0.80
CG-FE6-4N-1	3/8"	1/4"	0.31	1.32	1.00
CG-FE6-6N-1	3/8"	3/8"	0.31	1.40	1.00
CG-FE6-8N-1	3/8"	1/2"	0.31	1.59	1.12
CG-FE8-6N-1	1/2"	3/8"	0.44	1.50	1.12
CG-FE8-8N-1	1/2"	1/2"	0.40	1.63	1.25
CG-FE12-12N-1	3/4"	3/4"	0.68	1.83	1.62
CG-FE16-16N-1	1"	1"	0.94	2.05	1.88

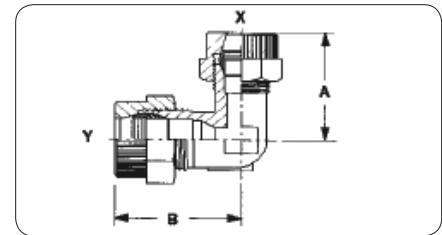
ChemGrip™ PFA Fittings

Grip Fittings



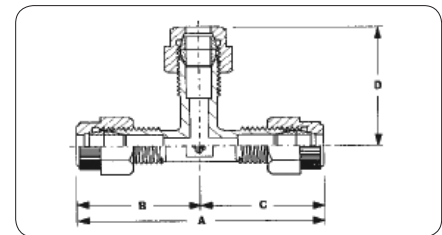
Union Elbow Inches

Item No.	Tube	Tube	Orifice	A	B
CG-UE22N-1	1/8"	1/8"	0.09	0.94	0.94
CG-UE44N-1	1/4"	1/4"	0.19	1.19	1.19
CG-UE66N-1	3/8"	3/8"	0.31	1.31	1.31
CG-UE88N-1	1/2"	1/2"	0.44	1.47	1.47
CG-UE1212N-1	3/4"	3/4"	0.68	1.83	1.83
CG-UE1616N-1	1"	1"	0.94	2.05	2.05



Union Elbow Reducer Inches

Item No.	Tube	Tube	Orifice	A	B
CG-UE42N-1	1/8"	1/4"	0.09	1.08	1.00
CG-UE64N-1	1/4"	3/8"	0.19	1.25	1.16
CG-UE84N-1	1/4"	1/2"	0.31	1.44	1.30
CG-UE86N-1	3/8"	1/2"	0.25	1.44	1.36
CG-UE128N-1	1/2"	3/4"	0.44	1.81	1.74
CG-UE1612N-1	3/4"	1"	0.69	2.03	1.99



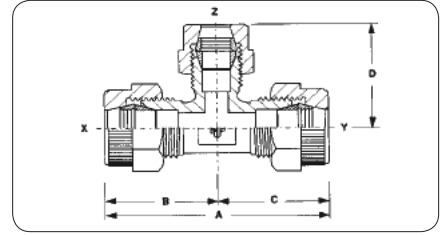
Union Tee Inches

Item No.	Tube	Orifice	A	B	C	D
CG-UT2N-1	1/8"	0.09	1.86	0.93	0.93	0.93
CG-UT4N-1	1/4"	0.19	2.28	1.14	1.14	1.35
CG-UT6N-1	3/8"	0.31	2.38	1.19	1.19	1.19
CG-UT8N-1	1/2"	0.44	3.16	1.58	1.58	1.58
CG-UT12N-1	3/4"	0.69	3.62	1.81	1.81	1.81
CG-UT16N-1	1"	0.94	4.10	2.05	2.05	2.05

ChemGrip™ PFA Fittings

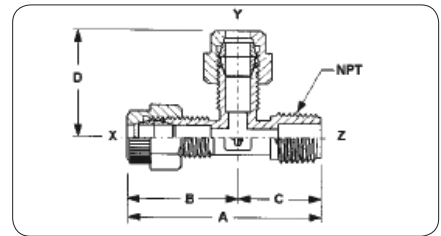
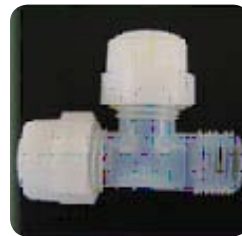


Grip Fittings



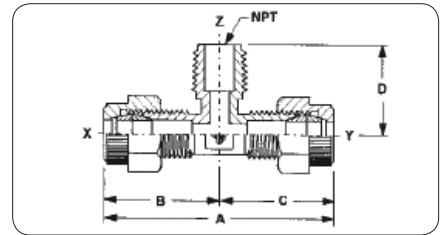
Union Tee Reducer Inches

Item No.	Tube X	Tube Y	Tube Z	Orifice	A	B	C	D
CG-UT6-4-6N-1	3/8"	3/8"	1/4"	0.19	2.40	1.20	1.20	1.16
CG-UT8-4-8N-1	1/2"	1/2"	1/4"	0.19	2.80	1.40	1.40	1.32
CG-UT8-6-8N-1	1/2"	1/2"	3/8"	0.31	2.80	1.40	1.40	1.36
CG-UT12-8-12N-1	3/4"	3/4"	1/2"	0.44	3.62	1.81	1.81	1.72



Male Run Tee Inches

Item No.	Tube X	Tube Y	MNPT Z	Orifice	A	B	C	D
CG-MRT22-2N-1	1/8"	1/8"	1/8"	0.09	1.70	0.92	0.78	0.92
CG-MRT44-4N-1	1/4"	1/4"	1/4"	0.19	1.90	1.05	0.85	1.05
CG-MRT66-6N-1	3/8"	3/8"	3/8"	0.31	2.13	1.19	0.94	1.19
CG-MRT88-8N-1	1/2"	1/2"	1/2"	0.44	2.62	1.39	1.23	1.39
CG-MRT1212-12N-1	3/4"	3/4"	3/4"	0.69	3.31	1.81	1.50	1.81
CG-MRT1616-16N-1	1"	1"	1"	0.94	3.93	2.05	1.88	2.05

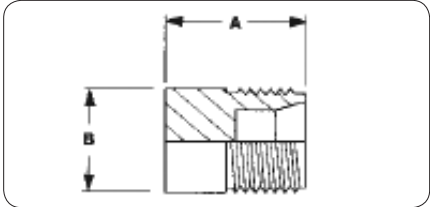


Male Branch Tee Inches

Item No.	Tube X	Tube Y	MNPT Z	Orifice	A	B	C	D
CG-MBT22-2N-1	1/8"	1/8"	1/8"	0.09	1.86	0.93	0.93	0.78
CG-MBT42-4N-1	1/4"	1/8"	1/4"	0.09	2.03	1.05	0.98	0.87
CG-MBT44-4N-1	1/4"	1/4"	1/4"	0.19	2.10	1.05	1.05	0.93
CG-MBT64-6N-1	3/8"	1/4"	3/8"	0.19	2.40	1.22	1.18	0.88
CG-MBT66-6N-1	3/8"	3/8"	3/8"	0.31	2.38	1.19	1.19	0.94
CG-MBT84-8N-1	1/2"	1/4"	1/2"	0.19	2.68	1.38	1.30	1.31
CG-MBT86-6N-1	1/2"	3/8"	3/8"	0.31	2.75	1.38	1.37	1.31
CG-MBT88-8N-1	1/2"	1/2"	1/2"	0.44	2.78	1.39	1.39	1.23
CG-MBT124-12N-1	3/4"	1/4"	3/4"	0.19	3.39	1.82	1.57	1.62
CG-MBT1212-12N-1	3/4"	3/4"	3/4"	0.69	3.62	1.81	1.81	1.50
CG-MBT1616-16N-1	1"	1"	1"	0.94	4.10	2.05	2.05	1.88

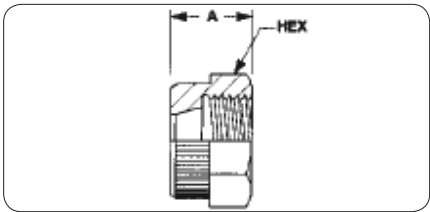
ChemGrip™ PFA Fittings

Grip Fittings



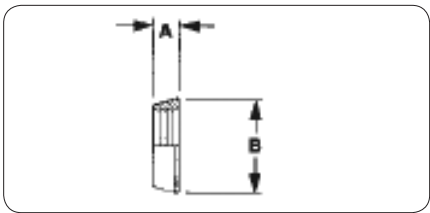
PTFE Cap Inches

Item No.	Tube	A	B
CG-CAP2	1/8"	0.88	0.31
CG-CAP4	1/4"	0.88	0.44
CG-CAP6	3/8"	0.88	0.69
CG-CAP8	1/2"	0.94	0.88
CG-CAP12	3/4"	1.00	1.13
CG-CAP16	1"	1.07	1.38



PTFE Nut Inches

Item No.	Tube	A	HEX
CG-N2-6	1/8"	0.52	1/2"
CG-N4-6	1/4"	0.56	5/8"
CG-N6-6	3/8"	0.72	7/8"
CG-N8-6	1/2"	0.78	1-3/16"
CG-N12-6	3/4"	0.92	1-3/8"
CG-N16-6	1"	0.94	1-5/8"



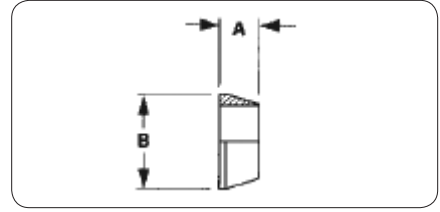
PVDF Gripper Inches

Item No.	Tube	A	B
CG-G2	1/8"	0.08	0.22
CG-G4	1/4"	0.15	0.38
CG-G6	3/8"	0.19	0.56
CG-G8	1/2"	0.19	0.69
CG-G12	3/4"	0.21	0.97
CG-G16	1"	0.21	1.22

ChemGrip™ PFA Fittings

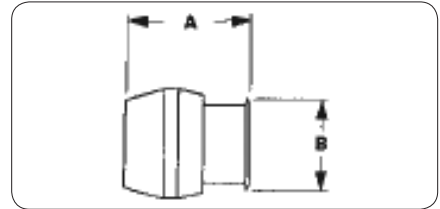


Grip Fittings



PTFE Ferrule Inches

Item No.	Tube	A	B
CG-F2	1/8"	0.20	0.21
CG-F4	1/4"	0.20	0.36
CG-F6	3/8"	0.26	0.53
CG-F8	1/2"	0.28	0.67
CG-F12	3/4"	0.34	0.94
CG-F16	1"	0.37	1.19



PTFE Plug Inches

Item No.	Tube	A	B
CG-P2	1/8"	0.39	0.22
CG-P4	1/4"	0.57	0.36
CG-P6	3/8"	0.71	0.53
CG-P8	1/2"	0.75	0.67
CG-P12	3/4"	0.88	0.94
CG-P16	1"	0.88	1.18



PFA Fluid Handling System

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