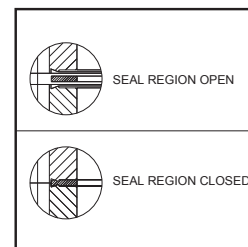


U.H.V. FLANGES AND FITTINGS

Ultra high vacuum is defined as the pressure range below to 10^{-8} mbar. UHV has become an indispensable tool for accelerators, surface analysis, molecular beam epitaxie, electronic microscopy and many other applications, when it is very important to have a low gas density together with more visible gas spectrum. As to the UHV requirements, both all the materials and the techniques have been strictly observed in order to achieve the utmost clean vacuum, along with a leakless and lowest outgassing.

CF Series Flanges and Components

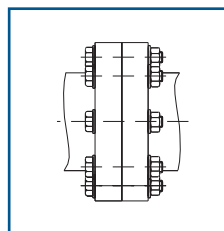
- Compatible with the Conflat range or similar
- Simple to use in any orientation
- Repeated sealing requires no special techniques
- All sizes are available either rotatable or non rotatable
- Flanges seal with a copper gaskets
- Viton gasket optional
- Available with tapped bolt holes in all sizes
- Complete range of double sides flanges
- Special flanges on request



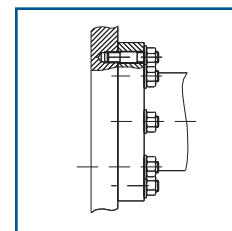
Sealing Principle of CF Series Flanges

The flat copper gasket is fitted between the cutting edges of a pair of CF flanges. The cutting edges pressed into flat copper gasket create a flow in a radial direction stopped by the vertical flange. Thus, the gasket is locked and ensure high reliability of seal, even at high temperatures. Sometimes, such flanges stick firmly together, for the above mentioned deformation; they can be easily separated with a special tool or screwdriver. This sealing principle is applied for connections up to 250 mm I.D. The materials used in flange manufacture are chosen to ensure the best reliability and freedom from leaks also at bake out temperature of 450° C. Materials available for flanges and fittings: 304 L, 304 LN ESR, 316 L, 316 LN, 316 LN ESR as ASTM E 45/76 - Method D.

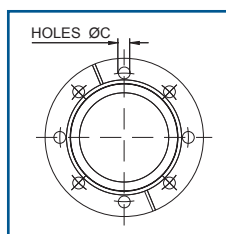
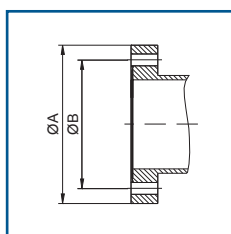
| TECHNICAL DATA | |
|---------------------------|---|
| Application range to | 10^{-12} mbar; |
| Max. bakeout temperature: | Viton seal 145° C |
| | Copper gasket 450° C |
| Internal diameters | 16 - 40 - 63 - 100 - 150 - 200 - 250 CF |
| CF components materials: | Stainless steel |
| Seal materials: | OFHC copper, OFHC silver plated copper, Viton |



Connection with screws



Connection with stud screws

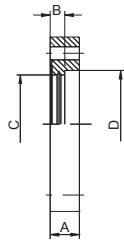


| Nominal diameter | OD. | A | B | C | Number of holes | Number of screws | Number of stud screws | Number of triple nuts |
|------------------|--------|-------|-------|-----|-----------------|------------------|-----------------------|-----------------------|
| CF 16 | 1 1/3" | 33 | 27 | 4,3 | 6 | 6 | 6 | 2 |
| CF 40 | 2 3/4" | 69,8 | 58,7 | 6,6 | 6 | 6 | 6 | 2 |
| CF 63 | 4 1/2" | 113,5 | 92,2 | 8,5 | 8 | 8 | 8 | 2 |
| CF 100 | 6" | 152 | 130,3 | 8,5 | 16 | 16 | 16 | - |
| CF 150 | 8" | 202,5 | 181 | 8,5 | 20 | 20 | 20 | - |
| CF 200 | 10" | 253 | 231,8 | 8,5 | 24 | 24 | - | - |
| CF 250 | 12" | 306 | 284 | 8,5 | 32 | 32 | - | - |

"CONFLAT" registered trade mark of VARIAN - USA

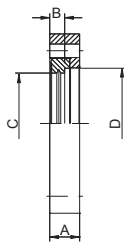
FLANGES

Welding flanges



| Materials | Nominal diameter | A | B | C | D | E | Code |
|------------|------------------|------|------|-----|------|---|-----------|
| AISI 304 L | CF16 | 7,2 | 4,3 | 16 | 18,6 | | 010201001 |
| | CF40 | 13 | 5,5 | 39 | 42,2 | | 010201002 |
| | CF63 | 19 | 9,5 | 64 | 70 | | 010201003 |
| | CF100 | 21 | 11 | 102 | 108 | | 010201004 |
| | CF150 | 24 | 12 | 153 | 159 | | 010201005 |
| | CF200 | 24,6 | 12,5 | 200 | 206 | | 010201006 |
| | CF250 | 26 | 13 | 250 | 256 | | 010201291 |

Rotatable Welding flanges



| | | | | | | | |
|------------|-------|------|------|-----|------|--|-----------|
| AISI 304 L | CF16 | 7,2 | 4,3 | 16 | 18,6 | | 010201019 |
| | CF40 | 13 | 5,5 | 39 | 42,2 | | 010201020 |
| | CF63 | 19 | 9,5 | 64 | 70 | | 010201021 |
| | CF100 | 21 | 11 | 102 | 108 | | 010201022 |
| | CF150 | 24 | 12 | 153 | 159 | | 010201023 |
| | CF200 | 24,6 | 12,5 | 200 | 206 | | 010201024 |
| | CF250 | 26 | 13 | 250 | 256 | | 010201294 |

Blank flanges



| | | | | | | | |
|------------|-------|------|--|--|--|--|-----------|
| AISI 304 L | CF16 | 7,2 | | | | | 010201025 |
| | CF40 | 13 | | | | | 010201026 |
| | CF63 | 19 | | | | | 010201027 |
| | CF100 | 21 | | | | | 010201028 |
| | CF150 | 24 | | | | | 010201029 |
| | CF200 | 24,6 | | | | | 010201030 |
| | CF250 | 26 | | | | | 010201295 |

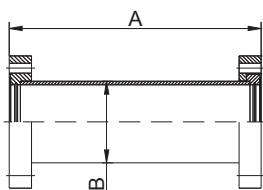
Rotatable blank flanges



| | | | | | | | |
|------------|-------|------|------|--|--|--|-----------|
| AISI 304 L | CF16 | 7,2 | 5,2 | | | | 010201031 |
| | CF40 | 13 | 7,6 | | | | 010201032 |
| | CF63 | 19 | 12,7 | | | | 010201033 |
| | CF100 | 21 | 14,3 | | | | 010201034 |
| | CF150 | 24 | 15,8 | | | | 010201035 |
| | CF200 | 24,6 | 17,1 | | | | 010201036 |
| | CF250 | 26 | 18,1 | | | | 010201296 |

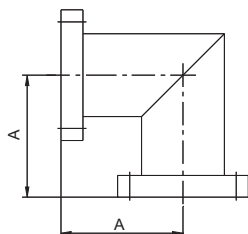
PIPE FITTINGS

Nipples (1 rotatable flange)



| | | | | | | | |
|------------|-------|-----|------|--|--|--|-----------|
| AISI 304 L | CF16 | 80 | 18,6 | | | | 010201067 |
| | CF40 | 130 | 42,2 | | | | 010201068 |
| | CF63 | 210 | 70 | | | | 010201069 |
| | CF100 | 280 | 108 | | | | 010201070 |
| | CF150 | 340 | 159 | | | | 010201071 |
| | CF200 | 400 | 206 | | | | 010201072 |
| | CF250 | 450 | 256 | | | | 010201297 |

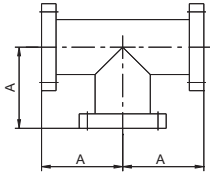
Elbows 90° (1 rotatable flange)



| | | | | | | | |
|------------|-------|-----|--|--|--|--|-----------|
| AISI 304 L | CF16 | 38 | | | | | 010201073 |
| | CF40 | 63 | | | | | 010201074 |
| | CF63 | 105 | | | | | 010201075 |
| | CF100 | 135 | | | | | 010201076 |
| | CF150 | 167 | | | | | 010201077 |
| | CF200 | 240 | | | | | 010201078 |
| | CF250 | 250 | | | | | 010201298 |

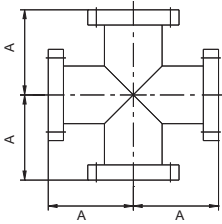
PIPE FITTINGS

| Materials | Nominal diameter | A | B | C | D | E | Code |
|--|------------------|-----|-----|---|---|---|-----------|
| <i>Tees 90° (2 rotatables flanges)</i> | | | | | | | |
| AISI 304 L | CF16 | 38 | 76 | | | | 010201079 |
| | CF40 | 63 | 126 | | | | 010201080 |
| | CF63 | 105 | 210 | | | | 010201081 |
| | CF100 | 135 | 270 | | | | 010201082 |
| | CF150 | 167 | 334 | | | | 010201083 |
| | CF200 | 240 | 480 | | | | 010201084 |
| | CF250 | 250 | 500 | | | | 010201099 |



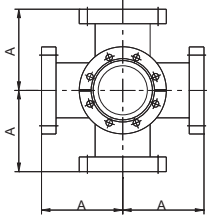
Crosses 90° (2 rotatables flanges)

| | | | | | | | |
|------------|-------|-----|-----|--|--|--|-----------|
| AISI 304 L | CF16 | 38 | 76 | | | | 010201085 |
| | CF40 | 63 | 126 | | | | 010201086 |
| | CF63 | 105 | 210 | | | | 010201087 |
| | CF100 | 135 | 270 | | | | 010201088 |
| | CF150 | 167 | 334 | | | | 010201089 |
| | CF200 | 240 | 480 | | | | 010201090 |
| | CF250 | 250 | 500 | | | | 010201300 |



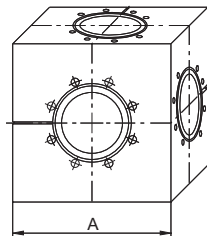
6 ways Crosses 90° (3 rotatables flanges)

| | | | | | | | |
|------------|-------|-----|--|--|--|--|-----------|
| AISI 304 L | CF16 | 38 | | | | | 010201091 |
| | CF40 | 63 | | | | | 010201092 |
| | CF63 | 105 | | | | | 010201093 |
| | CF100 | 135 | | | | | 010201094 |
| | CF150 | 167 | | | | | 010201095 |
| | CF200 | 240 | | | | | 010201096 |
| | CF250 | 250 | | | | | 010201301 |



Cubic Crosses 6 ways

| | | | | | | | |
|------------|-------|-----|--|--|--|--|-----------|
| AISI 304 L | CF16 | 40 | | | | | 010201144 |
| | CF40 | 75 | | | | | 010201145 |
| | CF63 | 116 | | | | | 010201146 |
| | CF100 | 154 | | | | | 010201147 |
| | CF150 | 206 | | | | | 010201148 |
| | CF200 | 255 | | | | | 010201149 |
| | CF250 | 310 | | | | | 010201150 |

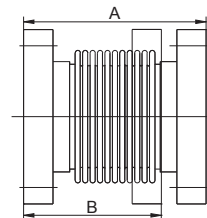


Reduction crosses can be realized on request

FLEXIBLE FITTINGS

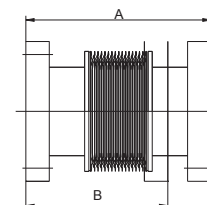
Bellows (1 rotatable flange)

| | | | | | | | |
|------------|-------|-----|-----|--|--|--|-----------|
| AISI 304 L | CF16 | 130 | 118 | | | | 010201115 |
| | CF40 | 194 | 176 | | | | 010201116 |
| | CF63 | 200 | 180 | | | | 010201117 |
| | CF100 | 220 | 200 | | | | 010201118 |
| | CF150 | 250 | 228 | | | | 010201119 |
| | CF200 | 300 | 270 | | | | 010201120 |
| | CF250 | 320 | 290 | | | | 010201302 |

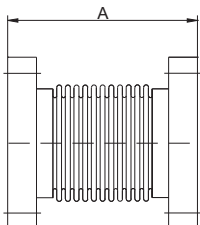


Membrane Bellows (1 rotatable flanges)

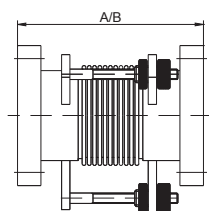
| | | | | | | | |
|------------|-------|-----|-----|-----|-------|--|-----------|
| AISI 304 L | CF16 | 95 | 77 | 16 | 19 | | 010201191 |
| | CF40 | 145 | 117 | 35 | 39 | | 010201192 |
| | CF63 | 194 | 168 | 63 | 67 | | 010201193 |
| | CF100 | 211 | 168 | 102 | 102,4 | | 010201194 |
| | CF150 | 214 | 186 | 153 | 159 | | 010201195 |
| | CF200 | 208 | 186 | 200 | 216 | | 010201196 |



FLEXIBLE PIPINGS

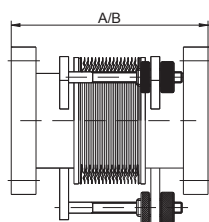
| | | Materials | Nominal diameter | A | B | C | D | E | Code |
|---|------------|-----------|------------------|---|---|---|-----------|---|-----------|
| <i>Flexible coupling (1 rotatable flange)</i> | | | | | | | | | |
|  | AISI 304 L | CF16 | 250 | | | | | | 010201161 |
| | | | 500 | | | | | | 010201162 |
| | | | 750 | | | | | | 010201163 |
| | | CF40 | 1000 | | | | | | 010201164 |
| | | | 250 | | | | | | 010201165 |
| | | | 500 | | | | | | 010201166 |
| | | CF63 | 750 | | | | | | 010201167 |
| | | | 1000 | | | | | | 010201168 |
| | | | 250 | | | | | | 010201169 |
| | | CF100 | 500 | | | | | | 010201170 |
| | | | 750 | | | | | | 010201171 |
| | | | 1000 | | | | | | 010201172 |
| | | CF200 | 250 | | | | | | 010201173 |
| | | | 500 | | | | | | 010201174 |
| | | | 750 | | | | | | 010201175 |
| | | CF200 | 1000 | | | | | | 010201176 |
| | | | 250 | | | | | | 010201177 |
| | | | 500 | | | | | | 010201178 |
| CF200 | 750 | | | | | | 010201179 | | |
| | 1000 | | | | | | 010201180 | | |
| | 250 | | | | | | 010201181 | | |
| CF250 | 500 | | | | | | 010201182 | | |
| | 750 | | | | | | 010201183 | | |
| | 1000 | | | | | | 010201184 | | |
| CF250 | 250 | | | | | | 010201185 | | |
| | 500 | | | | | | 010201186 | | |
| | 750 | | | | | | 010201187 | | |
| CF250 | 1000 | | | | | | 010201188 | | |

Adjusting Piece with Bellows (1 rotatable flange)



| | | | | | | | |
|------------|-------|-----|-----|-----|--|--|-----------|
| AISI 304 L | CF16 | 130 | 118 | 31 | | | 010201201 |
| | CF40 | 194 | 176 | 42 | | | 010201202 |
| | CF63 | 200 | 180 | 67 | | | 010201203 |
| | CF100 | 220 | 200 | 88 | | | 010201204 |
| | CF150 | 250 | 228 | 113 | | | 010201205 |
| | CF200 | 300 | 270 | 139 | | | 010201206 |
| | CF250 | 320 | 295 | 164 | | | 010201207 |

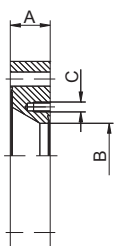
Adjusting Piece with Membrane Bellows (1 rotatable flange)



| | | | | | | | |
|------------|-------|-----|-----|-----|--|--|-----------|
| AISI 304 L | CF16 | 95 | 77 | 68 | | | 010201211 |
| | CF40 | 145 | 117 | 100 | | | 010201212 |
| | CF63 | 194 | 168 | 134 | | | 010201213 |
| | CF100 | 211 | 168 | 200 | | | 010201214 |
| | CF150 | 214 | 186 | 250 | | | 010201215 |
| | CF200 | 208 | 186 | 305 | | | 010201216 |

TRANSITION PIECES

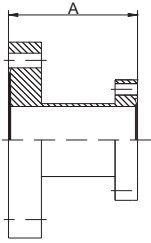
Reduction Flanges (zero length)



| | | | | | | | |
|------------|-------------|----|-----|---------|--|--|-----------|
| AISI 304 L | CF40/16ID | 15 | 16 | 6 x M4 | | | 010201060 |
| | CF63/40ID | 24 | 39 | 6 x M6 | | | 010201061 |
| | CF100/40ID | 24 | 39 | 6 x M6 | | | 010201062 |
| | CF100/63ID | 24 | 64 | 8 x M8 | | | 010201063 |
| | CF150/40ID | 24 | 39 | 6 x M6 | | | 010201064 |
| | CF150/63ID | 24 | 64 | 8 x M8 | | | 010201065 |
| | CF150/100ID | 24 | 102 | 16 x M8 | | | 010201066 |

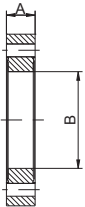
TRANSITION PIECES

| Materials | Nominal diameter | A | B | C | D | E | Code |
|---|------------------|-----|---|---|---|---|-----------|
| <i>Reductions (1 rotatable Flanges)</i> | | | | | | | |
| AISI 304 L | CF40/16ID | 60 | | | | | 010201097 |
| | CF63/40ID | 95 | | | | | 010201098 |
| | CF100/40ID | 110 | | | | | 010201099 |
| | CF100/63ID | 115 | | | | | 010201100 |
| | CF150/100ID | 120 | | | | | 010201101 |
| | CF200/150ID | 130 | | | | | 010201102 |



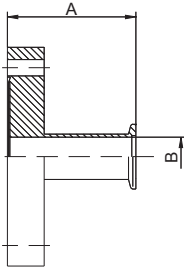
Double face flanges

| | | | | | | | |
|------------|-------|----|-----|--|--|--|-----------|
| AISI 304 L | CF16 | 19 | 16 | | | | 010201152 |
| | CF40 | 19 | 39 | | | | 010201153 |
| | CF63 | 19 | 64 | | | | 010201154 |
| | CF100 | 21 | 102 | | | | 010201155 |



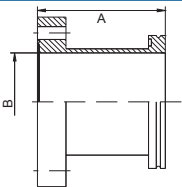
Adaptors CF/Pneurop Flange

| | | | | | | | |
|------------|-----------|----|----|--|--|--|-----------|
| AISI 304 L | CF16/DN10 | 40 | 10 | | | | 010201103 |
| | CF16/DN16 | 40 | 16 | | | | 010201104 |
| | CF40/DN10 | 40 | 10 | | | | 010201105 |
| | CF40/DN16 | 40 | 16 | | | | 010201106 |
| | CF40/DN25 | 40 | 24 | | | | 010201107 |
| | CF40/DN40 | 60 | 39 | | | | 010201108 |
| | CF63/DN40 | 60 | 39 | | | | 010201109 |



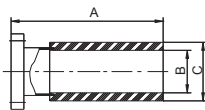
Adaptors CF/ISO Clamped Flange

| | | | | | | | |
|------------|-------------|-----|-----|--|--|--|-----------|
| AISI 304 L | CF63/DN63 | 100 | 64 | | | | 010201110 |
| | CF100/DN100 | 100 | 102 | | | | 010201111 |
| | CF150/DN160 | 100 | 153 | | | | 010201112 |



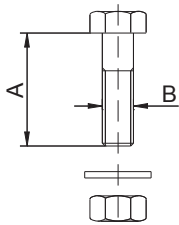
Glass Adaptors

| | | | | | | | |
|--|--------|-----|----|----|--|--|-----------|
| | CF16ID | 110 | 14 | 16 | | | 010201113 |
| | CF40ID | 130 | 36 | 40 | | | 010201114 |



SCREWS

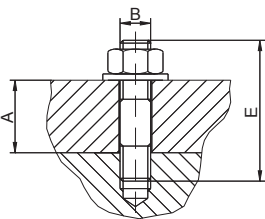
| | | | | | | | number required | necessary torque |
|--|-------|----|----|----|--------|--|-----------------|------------------|
| <i>Set of Bolt (25 incl. bolts nuts and washers)</i> | | | | | | | | |
| Silver plated | CF16 | 20 | M4 | 6 | 0,6 Kg | | 010201239 | |
| | CF40 | 35 | M6 | 6 | 1,5 Kg | | 010201240 | |
| | CF63 | 50 | M8 | 8 | 2,5 Kg | | 010201241 | |
| | CF100 | 55 | M8 | 16 | 2,5 Kg | | 010201242 | |
| | CF150 | 60 | M8 | 20 | 3 Kg | | 010201243 | |
| | CF200 | 60 | M8 | 24 | 3 Kg | | 010201243 | |
| | CF250 | 65 | M8 | 32 | 3 Kg | | 010201244 | |



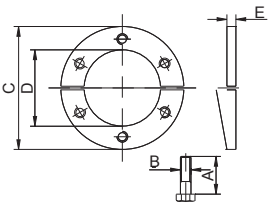
Not silver plated version available on request

Studs for tapped Bolt Holes (25 incl. bolts nuts and washers)

| | | | | | | | |
|---------------|-------|------|----|----|--------|----|-----------|
| Silver plated | CF16 | 8 | M4 | 6 | 0,4 Kg | 22 | 010201246 |
| | CF40 | 13 | M6 | 6 | 1 Kg | 32 | 010201247 |
| | CF63 | 19 | M8 | 8 | 2 Kg | 44 | 010201248 |
| | CF100 | 21 | M8 | 16 | 2 Kg | 50 | 010201249 |
| | CF150 | 24 | M8 | 20 | 3 Kg | 55 | 010201250 |
| | CF200 | 24,6 | M8 | 24 | 3 Kg | 55 | 010201251 |
| | CF250 | 25,2 | M8 | 32 | 3 Kg | 55 | 010201252 |



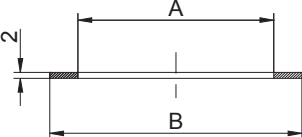
SCREWS

| | Materials | Nominal diameter | A | B | C | D | E | Code |
|---|---------------|------------------|---------------|----|-----|------|---|-----------|
| <i>Bolt with triple nuts (set of bolts with 2 triple nuts)</i> | | | | | | | | |
|  | Silver plated | CF16 | 20 | M4 | 33 | 20,3 | | 010201254 |
| | | CF40 | 35 | M6 | 68 | 40,2 | | 010201255 |
| | | CF63 | 50 | M8 | 111 | 72 | | 010201256 |
| <i>Temperature Resistant</i> | to 1000°C | | Grease 1/2 Kg | | | | | 010201258 |
| <i>Thread Lubrificants</i> | to 1000°C | | Spray 300 ml | | | | | 010201259 |

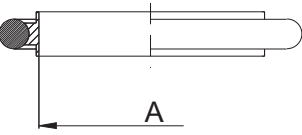
This lubricant ensure that the screws in UHV systems can be easily turned and do not seize. These thread lubricant tolerate high temperature at atmospheric pressure. It is fully effective for at least 10 bakeout cycles.

GASKETS

Copper Gasket

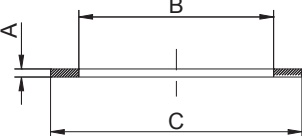
| | | | | | | | | |
|---|--------|-------|-------|-------|--|--|------------|-----------|
|  | Copper | CF16 | 21,2 | 16,2 | | | set 10 pcs | 010201037 |
| | | CF40 | 48,1 | 39 | | | set 10 pcs | 010201038 |
| | | CF63 | 82,4 | 63,6 | | | set 10 pcs | 010201039 |
| | | CF100 | 120,4 | 101,7 | | | set 10 pcs | 010201040 |
| | | CF150 | 171,3 | 152,6 | | | set 10 pcs | 010201041 |
| | | CF200 | 222,1 | 203,3 | | | set 10 pcs | 010201042 |
| | | CF250 | 273 | 254 | | | set 5 pcs | 010201043 |

Centerig ring with OR Viton

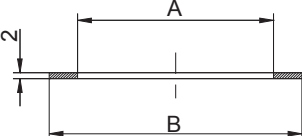
| | | | | | | | | |
|---|---------------------|-------|-----|--|--|--|--|-----------|
|  | AISI 304 L Viton | CF16 | - | | | | | - |
| | | CF40 | 33 | | | | | 010201044 |
| | | CF63 | 60 | | | | | 010201045 |
| | | CF100 | 98 | | | | | 010201046 |
| | | CF150 | 149 | | | | | 010201047 |
| | | CF200 | 196 | | | | | 010201048 |
| | | CF250 | 246 | | | | | 010201305 |

Bakeability to 150°C

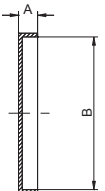
Viton Gasket

| | | | | | | | | |
|---|-------|-------|-----|------|-------|--|-----------|-----------|
|  | Viton | CF16 | 2,3 | 16,5 | 21,4 | | set 5 pcs | 010201261 |
| | | CF40 | 2,3 | 36 | 48,3 | | set 5 pcs | 010201262 |
| | | CF63 | 2,3 | 69 | 82,5 | | set 5 pcs | 010201263 |
| | | CF100 | 2,3 | 106 | 120,6 | | set 5 pcs | 010201264 |
| | | CF150 | 2,3 | 155 | 171,4 | | set 5 pcs | 010201265 |

Silver Plated Copper Gasket

| | | | | | | | | |
|---|-------------------------|-------|---|-------|-------|--|------------|-----------|
|  | Silver plated Copper | CF16 | 2 | 21,2 | 16,2 | | set 10 pcs | 010201271 |
| | | CF40 | 2 | 48,1 | 39 | | set 10 pcs | 010201272 |
| | | CF63 | 2 | 82,4 | 63,6 | | set 10 pcs | 010201273 |
| | | CF100 | 2 | 120,4 | 101,7 | | set 10 pcs | 010201274 |
| | | CF150 | 2 | 171,3 | 152,6 | | set 10 pcs | 010201275 |
| | | CF200 | 2 | 222,1 | 203,3 | | set 10 pcs | 010201276 |

CF protective cover

| | | | | | | | | |
|---|--------------|-------|------|-------|--|--|--|-----------|
|  | Polyethylene | CF16 | 9,5 | 33 | | | | 010201281 |
| | | CF40 | 17,5 | 69,8 | | | | 010201282 |
| | | CF63 | 22 | 113,5 | | | | 010201283 |
| | | CF100 | 24,5 | 152 | | | | 010201284 |
| | | CF150 | 27 | 202,5 | | | | 010201285 |
| | | CF200 | 29 | 253 | | | | 010201286 |