ISO KF Flanges and fittings

Introduction

ISO KF Assembly

Features

- Fast connect and disconnect
- 316L (1.4301) Stainless steel fittings
- All-metal aluminium clamps
- Viton® O-ring bakeable to 150°C
- Single wing nut closure
- ISO compatible

Specifications

Material

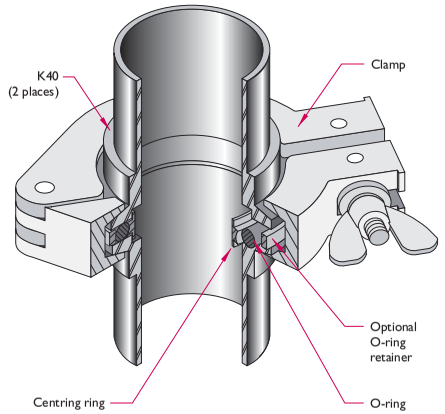
Fittings	304 Stainless steel, TIG welded
Clamps	Aluminium
Standard O-rings	Du Pont Viton® fluoroelastomer
Vacuum	O-ring compression by uniform pressure application around the 15° outer flange surfaces
Flanges	ISO standard dimensions 360° rotatable Four standard flange sizes for use with four tube sizes
Tube bore sizes[1]	12.7, 15.8, 22.1, 38.1 and 50mm
Maximum temperature	150°C
Components	Reusable and interchangeable with other ISO dimension components of the same size

[1] Caburn-MDC reserves the right to substitute a larger-bore tube according to availability

UHV Series

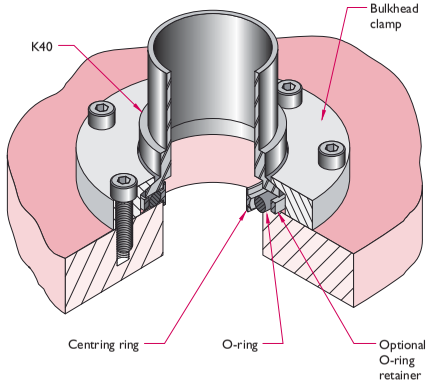
ISO KF

Typical installation



Bulkhead clamp

Typical installation



Flanges and fittings

Section 1.2

ISO KF Flanges and fittings

Introduction

ISO KF vacuum systems employ components with metric interface dimensions which have been defined by the International Standards Organisation (ISO). This ensures a high degree of compatibility between components obtained from different sources. Caburn-MDC ISO KF are compatible with Klein Flange (KF) types.

Use ISO KF for tube sizes DN16 to DN50.

Our standard range of KF flanges and fittings are manufactured from 304 (1.4301) stainless steel.

ISO KF constitutes an economical system of reusable interfacing stainless steel vacuum fittings and components for 19.1, 25.4, 38.1 and 50.8mm OD tubing. Assemblies are usable to 10^{-8} mbar. Maximum temperature for sustained use is 150°C. They are ideal for vacuum systems requiring regular assembly and disassembly.

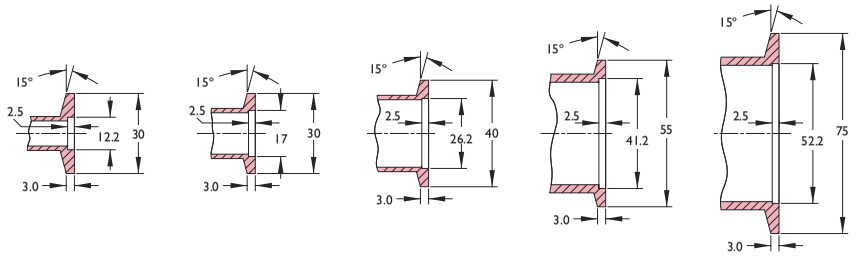
Each vacuum seal is made by compression of an O-ring on a centring ring between mating flanges. The seal is made in seconds by finger-closure of a wing nut on the all-metal hinged aluminium clamp.

The ISO KF family of modular building block components includes all commonly used standard fittings, feedthroughs and accessories. Reducing flanges are available to connect different size components. Mating flanges are offered to interface with pipe and other flange systems including LF and CF.

Inch-metric ISO comparison

Tube OD inches	Caburn-MDC reference	ISO	Nominal tube ID mm
0.75	K16	DN16KF	16
1.00	K25	DN25KF	25
1.50	K40	DN40KF	40
2.00	K50	DN50KF	50
2.50	L63	DN63LF	63.5
4.00	L100	DN100LF	102
6.00	L160	DN160LF	153
8.00	L200	DN200LF	212
10.00	L250	DN250LF	254
12.75	L320	DN320LF	316
16.00	L400	DN400LF	400
20.00	L500	DN500LF	500

Dimensions with ISO industry cross-references



DN10KF DN16KF DN25KF DN40KF DN50KF

Caburn-MDC reserves the right to substitute a larger-bore tube according to availability

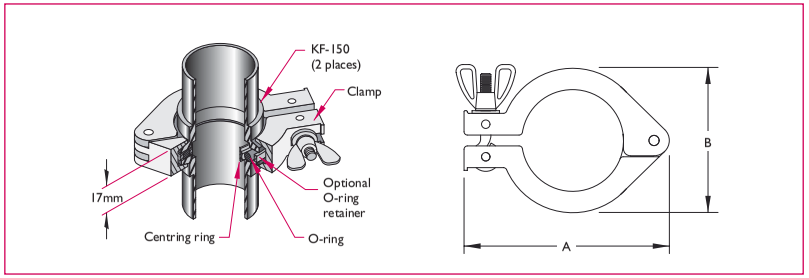
ISO KF Flanges and fittings

Clamps

Hinged clamp

Features

- Fastens ISO KF of comparable size
- Quick make and break
- Stainless steel wing nut and bolt
- Aluminium construction
- Requires centring ring with elastomer gasket



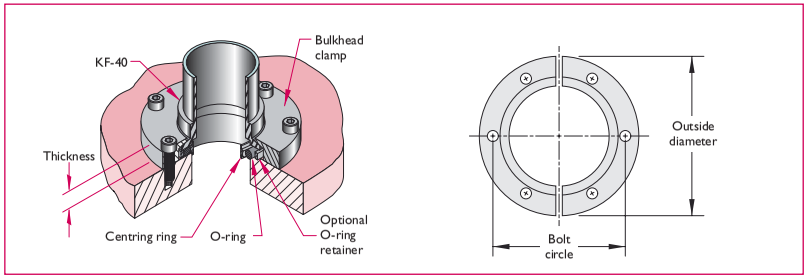
Flange size	Tube size	A	B	Wt kg	Reference	Part number	£	€	SFr.
DN10/16KF	12.7-19.0	71	45	0.2	K16-C	**7701000**	2	3	4
DN20/25KF	25.4	80	55	0.2	K25-C	**7701001**	2	3	4
DN32/40KF	38.1	96	70	0.3	K40-C	**7701002**	3	5	7
DN50KF	50.8	123	95	0.5	K50-C	**7701003**	4	6	9

Hinged clamp assemblies are the most commonly used method for making ISO KF vacuum seal connections. Prior to clamping, flanges can be rotated 360° and accept self-centring centring ring seals. Pressure is applied uniformly around the 15° outer surface of both flanges by finger-tightening the single wing nut until the first metal-to-metal contact is made between the spacing lips of the centring ring and the inner surface of the mating flanges. This compresses the O-ring between the flanges and makes the vacuum seal.

Bulkhead clamp

Features

- Fastens ISO KF directly to flat plates
- Bolt fastening
- Split-ring geometry
- Aluminium construction
- Requires centring ring with elastomer gasket



Flange size	No. of bolts	Thickness	BCD	OD	Wt kg	Reference	Part number	£	€	SFr.
Aluminium										
DN16KF	6	9	38.0	51	0.2	K75-BC	**716000**	15	22	33
DN25KF	6	10	48.0	60	0.2	K100-BC	**716001**	17	26	37
DN40KF	6	10	62.0	75	0.2	K150-BC	**716002**	20	30	44
DN50KF	8	10	82.5	95	0.2	K200-BC	**716003**	23	35	51

Bolted bulkhead clamps are commonly used to fasten ISO KF components to flat chamber walls or baseplates. Use of this product requires customer machining of six or eight M5 threaded bolt holes on the mounting surface. Once a clamp has been positioned and aligned with the mating bolt holes, a vacuum seal is made by alternately wrench-tightening opposing pairs of bolts. A complete bulkhead clamp assembly consists of two semicircular clamps, six or eight M5 x 16mm long stainless steel bolts and washers.

All dimensions are nominal in millimetres unless specified Weights given are approximate

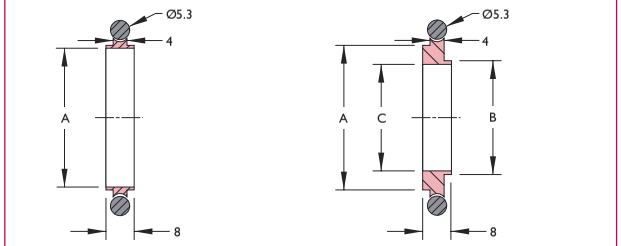
ISO KF Flanges and fittings

Centring rings

Centring rings

Features

- Standard ring mates ISO KF of equal size
- Adaptor ring mates ISO KF of unequal size
- Includes elastomer O-ring
- Stainless steel or aluminium construction



Centring ring assemblies are placed between two ISO flanges with matching outer diameters. The widest portion of the centring ring rests inside a capture groove on the flange and the O-ring rests on the flat polished surface outside the capture groove. On a blank flange, the groove seen on the face of a flange is the capture groove, with the O-ring making contact with this flange face just outside the groove.

Aluminium Viton® O-ring

- Maximum bakeout temperature 200°C
- Sustained use to 150°C
- Aluminium

KF Flange	A	Reference	Part number	£	€	SFr.
DN16KF	16	K16-CRA	**7710013**	2	3	4
DN25KF	25	K25-CRA	**7710014**	2	3	4
DN40KF	40	K40-CRA	**7710015**	3	5	7
DN50KF	50	K50-CRA	**7710016**	5	8	11

Aluminium Buna-N® O-ring

- Maximum bakeout temperature 100°C
- Sustained use to 80°C
- Aluminium

KF Flange	A	Reference	Part number	£	€	SFr.
DN16KF	16	K16-CRAB	**7710017**	1	2	3
DN25KF	25	K25-CRAB	**7710018**	2	3	4
DN40KF	40	K40-CRAB	**7710019**	2	3	4
DN50KF	50	K50-CRAB	**7710020**	2	3	5

Stainless steel Viton® O-ring

- Maximum bakeout temperature 200°C
- Sustained use to 150°C
- Stainless steel

KF Flange	A	Reference	Part number	£	€	SFr.
DN16KF	16	K16-CR	**7710000**	2	3	4
DN25KF	25	K25-CR	**7710001**	3	5	7
DN40KF	40	K40-CR	**7710002**	3	5	7
DN50KF	50	K50-CR	**7710003**	5	8	11

Stainless steel silicone O-ring

- For use in corrosive environments where silicone is acceptable
- Maximum bakeout temperature 200°C
- Sustained use to 150°C
- Stainless steel

KF Flange	A	Reference	Part number	£	€	SFr.
DN16KF	16	K16-CRS	**7710021**	4	6	9
DN25KF	25	K25-CRS	**7710022**	6	9	13
DN40KF	40	K40-CRS	**7710023**	8	12	18
DN50KF	50	K50-CRS	**7710024**	10	15	22

Adaptor rings

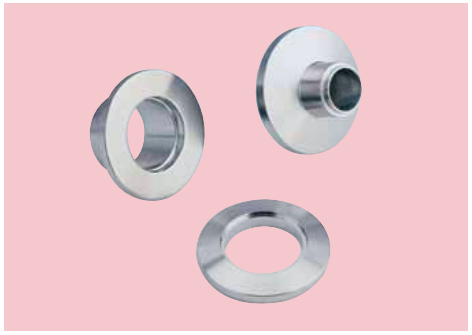
- Viton® O-ring
- Maximum bakeout temperature 200°C
- Sustained use to 150°C
- Stainless steel

KF Flange	A	B	C	Reference	Part number	£	€	SFr.
DN16KF-10KF	17	12	10	K16-10-CR	**7710010**	4	6	9
DN25KF-20KF	26	22	20	K25-20-CR	**7710011**	6	8	12
DN40KF-32KF	41	34	32	K40-32-CR	**7710012**	7	11	16

All dimensions are nominal in millimetres unless specified

ISO KF Flanges and fittings

DN16 KF



Features

- HV rated to 1x10^{-8} mbar
- High-temperature rated to 200°C
- Symmetric, non-rotatable geometry
- Elastomer O-ring seal
- Clamp-style fastening
- ISO-compatible design

Specifications

Material			
Flanges			304ss
O-rings			Viton®, Buna-N® or silicone elastomer
Clamps, hinged and bulkhead			Aluminium
Fastening			
Clamp type			Hinged with metric thread
Bulkhead type			Hexagonal head bolts, M5 thread
Nut type			Hexagonal
Torque			Clamp: Finger tight Bolts: 9 to 14 Nm
Vacuum range			1x10^{-8} mbar
Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C
Silicone	-20°C	200°C	150°C
Weight			0.1 kg maximum
Dimensions			30.0 OD x 17.3 ID maximum

HV Series

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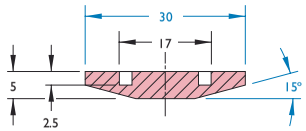


Figure 2 Unbored stub

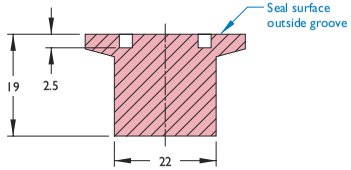


Figure 3 Weld flange – small tube

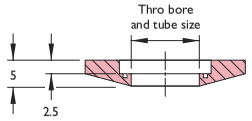


Figure 4 Weld flange

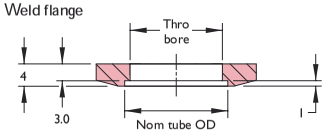
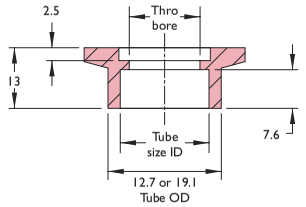


Figure 5 Socket weld



Dimensions in blue are common to all flanges

Tube OD nominal	Figure	Flange reference	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel								
Blank	1	Blank	0.03	K16-B	**7712000**	2	3	4
Blank	2	Blank	0.03	K16-US	**7715000**	8	12	18
9.5	3	Weld	0.03	K16-10-W	**7713005**	11	16	24
12.7	3	Weld	0.03	K16-12-W	**7713006**	11	16	24
12.7	5	Socket weld	0.03	K16-12-SW	**7713000**	9	14	20
19.1	4	Weld	0.02	K16-W	**7713007**	4	6	9
19.1	5	Socket weld	0.02	K16-SW	**7713001**	4	6	9
Aluminium								
Blank	1	Blank	0.05	K16-ALB	**1120151**	2	3	4

All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO KF Flanges and fittings

DN25 KF

Features

- HV rated to 1x10^{-8} mbar
- High-temperature rated to 200°C
- Symmetric, non-rotatable geometry
- Elastomer O-ring seal
- Clamp-style fastening
- ISO-compatible design

Specifications

Material			
Flanges			304ss
O-rings			Viton®, Buna-N® or silicone elastomer
Clamps, hinged and bulkhead			Aluminium
Fastening			
Clamp type			Hinged with metric thread
Bulkhead type			Hexagonal head bolts, M5 thread
Nut type			Hexagonal
Torque			Clamp: Finger tight Bolts: 9 to 14 Nm
Vacuum range			1x10^{-8} mbar
Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C
Silicone	-20°C	200°C	150°C
Weight			0.1 kg maximum
Dimensions			39.9 OD x 22.2 ID maximum

HV Series

Figure 1 Blank

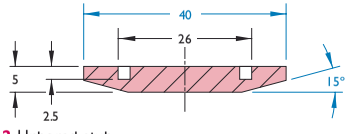


Figure 2 Unbored stub

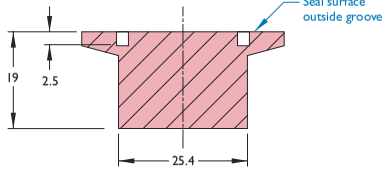


Figure 3 Weld flange – small tube

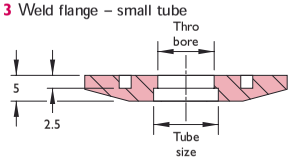


Figure 4 Weld flange

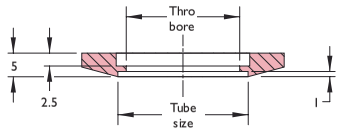
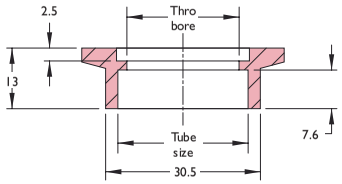


Figure 5 Socket weld



Dimensions in blue are common to all flanges

Tube OD nominal	Figure	Flange reference	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel								
Blank	1	Blank	0.05	K25-B	**7712001**	3	5	7
Blank	2	Blank	0.05	K25-US	**7715001**	13	19	29
9.5	3	Weld	0.05	K25-10-W	**7713008**	11	16	24
12.7	3	Weld	0.04	K25-12-W	**7713009**	11	16	24
19.1	4	Weld	0.04	K25-19-W	**7713010**	10	15	22
25.4	4	Weld	0.04	K25-W	**7713011**	6	9	13
19.1	5	Socket weld	0.04	K25-SW	**7713002**	7	11	16
Aluminium								
Blank	1	Blank	0.05	K25-ALB	**1120152**	2	3	5

All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO KF Flanges and fittings

DN40 KF

Features

- HV rated to $1x10^{-8}$ mbar
- High-temperature rated to 200°C
- Symmetric, non-rotatable geometry
- Elastomer O-ring seal
- Clamp-style fastening
- ISO-compatible design

Specifications

Material			
Flanges			304ss
O-rings			Viton®, Buna-N® or silicone elastomer
Clamps, hinged and bulkhead			Aluminium
Fastening			
Clamp type			Hinged with metric thread
Bulkhead type			Hexagonal head bolts, 10-32 UNC thread
Nut type			Hexagonal
Torque			Clamp: Finger tight Bolts: 9 to 14 Nm
Vacuum range			$1x10^{-8}$ mbar
Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C
Silicone	-20°C	200°C	150°C
Weight			0.2 kg maximum
Dimensions			54.9 OD x 34.9 ID maximum

HV Series

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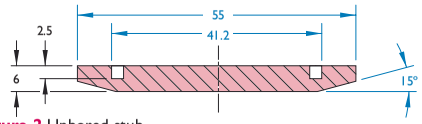


Figure 2 Unbored stub

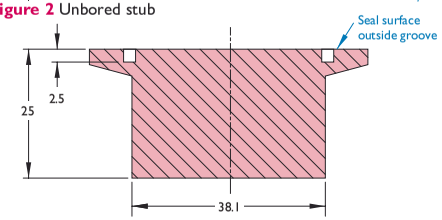


Figure 3 Weld flange – small tube

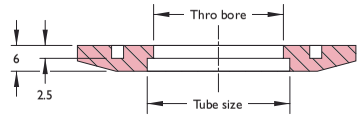


Figure 4 Weld flange

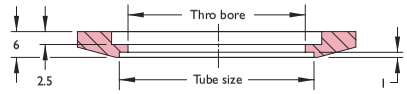
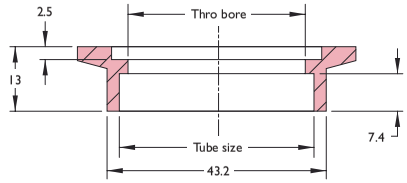


Figure 5 Socket weld



Dimensions in blue are common to all flanges

Tube OD nominal	Figure	Flange reference	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel								
Blank	1	Blank	0.09	K40-B	**712002**	4	6	9
Blank	2	Blank	0.2	K40-US	**715002**	15	23	33
9.5	3	Weld	0.1	K40-10-W	**713012**	14	21	31
12.7	3	Weld	0.1	K40-12-W	**713013**	14	21	31
19.1	3	Weld	0.06	K40-19-W	**713014**	14	21	31
25.4	3	Weld	0.06	K40-25-W	**713015**	14	21	31
44.5	4	Weld	0.04	K40-W	**713016**	8	12	18
38.6	5	Socket weld	0.08	K40-SW	**713003**	9	14	20
Aluminium								
Blank	1	Blank	0.05	K40-ALB	**1120153**	3	4	6

All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO KF Flanges and fittings

DN50 KF

Features

- HV rated to $1x10^{-8}$ mbar
- High-temperature rated to 200°C
- Symmetric and non-rotatable geometry
- Elastomer O-ring seal
- Clamp-style fastening
- ISO-compatible design

Specifications

Material			
Flanges			304ss
O-rings			Viton®, Buna-N® or silicone elastomer
Clamps, hinged and bulkhead			Aluminium
Fastening			
Clamp type			Hinged with metric thread
Bulkhead type			Hexagonal head bolts, M5 thread
Nut type			Hexagonal
Torque			Clamp: Finger tight Bolts: 9 to 14 Nm
Vacuum range			$1x10^{-8}$ mbar
Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C
Silicone	-20°C	200°C	150°C
Weight			0.2 kg maximum
Dimensions			75 OD x 52.5 ID maximum

HV Series

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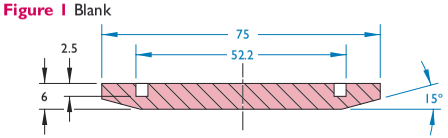


Figure 2 Unbored stub

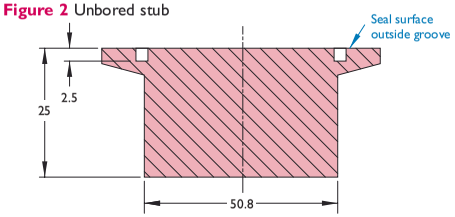


Figure 3 Weld flange – small tube

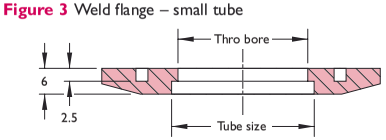


Figure 4 Weld flange

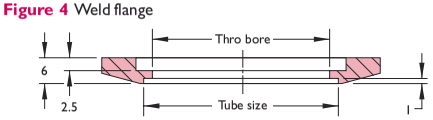
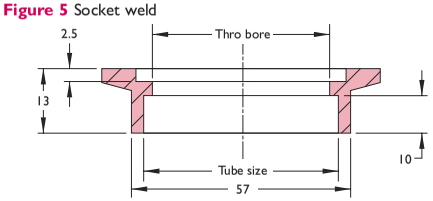


Figure 5 Socket weld



Dimensions in blue are common to all flanges

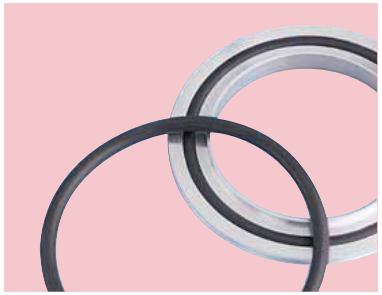
Tube OD nominal	Figure	Flange reference	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel								
Blank	1	Blank	0.18	K50-B	**712003**	7	11	16
Blank	2	Blank	0.18	K50-US	**715003**	26	39	57
9.5	3	Weld	0.18	K50-10-W	**713017**	20	30	44
12.7	3	Weld	0.18	K50-12-W	**713018**	20	30	44
19.1	3	Weld	0.18	K50-19-W	**713019**	20	30	44
25.4	3	Weld	0.18	K50-25-W	**713020**	20	30	44
38.1	3	Weld	0.18	K50-38-W	**713021**	20	30	44
51.0	4	Weld	0.13	K50-W	**713022**	9	13	20
51.3	5	Socket weld	0.13	K50-SW	**713004**	10	15	23
Aluminium								
Blank	1	Blank	0.05	K50-ALB	**1120154**	8	12	18

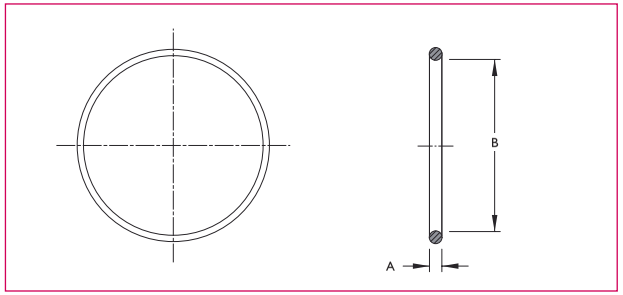
All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO KF Flanges and fittings

Replacement O-rings and flange caps

Replacement O-rings





Viton® O-ring

- Maximum bakeout temperature 200°C
- Sustained use to 150°C

KF Flange	A	B	Reference	Part number	£	€	SFr.
DN10KF	5	15	K10-O	**711004**	2	3	4
DN16KF	5	18	K16-O	**711000**	2	3	4
DN25KF	5	28	K25-O	**711001**	2	3	4
DN40KF	5	41	K40-O	**711002**	2	3	5
DN50KF	5	55	K50-O	**711003**	2	3	5

Buna-N® O-ring

- Maximum bakeout temperature 100°C
- Sustained use to 80°C

KF Flange	A	B	Reference	Part number	£	€	SFr.
DN10KF	5	15	K10-OB	**711020**	1	1	2
DN25KF	5	28	K25-OB	**711022**	1	1	2
DN40KF	5	41	K40-OB	**711024**	2	2	3
DN50KF	5	55	K50-OB	**711025**	2	2	3

Silicone O-ring

- Maximum bakeout temperature 200°C
- Sustained use to 150°C

KF Flange	A	B	Reference	Part number	£	€	SFr.
DN10KF	5	15	K10-OS	**711005**	3	4	6
DN16KF	5	18	K16-OS	**711006**	3	4	6
DN25KF	5	28	K25-OS	**711007**	3	4	6
DN40KF	5	42	K40-OS	**711008**	4	5	8
DN50KF	5	55	K50-OS	**711009**	5	6	9

Flange caps

To fit flange	Quantity per pack	Reference	Part number	£	€	SFr.
KF16	2	KFC16	**192009**	1	1	2
KF25	2	KFC25	**192010**	1	1	2
KF40	2	KFC40	**192011**	1	1	2
KF50	2	KFC50	**192012**	1	1	2

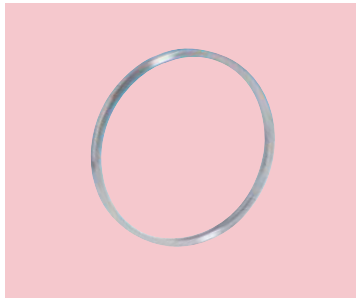
All dimensions are nominal in millimetres unless specified

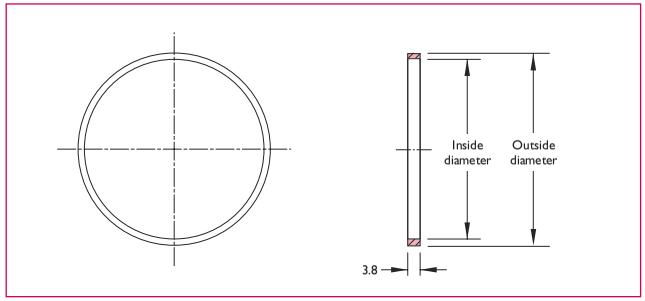
Flanges and fittings

ISO KF Flanges and fittings

O-ring retainers

O-ring retainer





Features

- Supports O-ring outside diameter during pressure burst
- Not for sustained pressures above one atmosphere
- Stainless steel construction

KF Flange	OD	ID	Wt kg	Reference	Part number	£	€	SFr.
DN16	33.3	29.5	0.1	K16-ORR	**7710025**	8	12	18
DN25	43.2	36.6	0.1	K25-ORR	**7710026**	8	12	18
DN40	58.7	54.9	0.1	K40-ORR	**7710027**	9	14	20
DN50	69.9	67.8	0.1	K50-ORR	**7710028**	10	15	22

Place an O-ring retainer over a centring ring assembly which is already centred on a single flange face. Place the second flange over the centring ring and O-ring retainer and secure with a hinged clamp.

All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO LF Flanges and fittings

Introduction

ISO LF Flange assembly

Features

- Vacuum rated to 1×10^{-8} mbar
- Bakeable to 200°C
- Fast connect and disconnect
- Economical reusable fittings
- Genderless geometry
- Rotatable bolt ring adaptor
- Elastomer gasket seal
- Varied fastening methods
- ISO LF compatible
- 304 stainless steel construction

Specifications

Material	
Flanges	304 (1.4301)
Centring rings and claws	300ss and aluminium
Bolts	Steel
Flange	ISO standard dimensions 360° sexless rotatable Eight standard sizes
Maximum bakeout temperature	150°C
Number of clamps required	See table
Components	Reusable and interchangeable with other ISO dimension components of the same size

Caburn-MDC's ISO LF components are an economical system of reusable and interfacing stainless steel vacuum fittings for tube sizes ranging from 63.5mm through to 500mm diameters. ISO LF flanges pick up where the ISO KF system leaves off. These flanges can operate in high vacuum environments to pressures in the 1×10^{-8} mbar range. The ISO LF flange system is ideally suited for applications requiring rapid and frequent assembly and disassembly. Caburn-MDC ISO LF flanges comply with all ISO specifications for vacuum mounting hardware and are compatible with most third party ISO LF flanges and components.

The primary method of fastening and sealing is achieved by using multiple double claw-clamp assemblies to provide uniform compression of an elastomer gasket trapped between two mating flanges. The elastomer gasket is mounted on an aluminium centring ring that has tubular rims or extensions that protrude on either side of the gasket. These rims or extensions fit into grooves on the corresponding mating flanges and conveniently centre the gasket between the flanges prior to sealing. A reliable seal is then made by tightening bolts in an alternating, criss-cross pattern and thus applying uniform pressure around the entire flange sealing surface.

Single claw-clamps are ideally suited for applications where one of the mating flanges is flush mounted and fitted with threaded bolt holes. Both the double and single claw-clamp fasteners provide unlimited rotation or positioning of mating flanges prior to final tightening of bolts.

Bolted rotatable adaptor rings provide a convenient way of fastening claw style flanges to threaded ISO LF flanges, without the use of individual claw-clamps. Rotatable bolt rings are ideally suited for use in applications where low profile geometry is required.

Bolted non-rotatable ISO LF flanges use bolts for fastening and are typically used where single claw fasteners are not desirable. They too, are ideally suited for use in applications where low profile geometry is required, but do not offer rotatable construction.

The Caburn-MDC ISO LF family of modular building-block components includes all of the commonly used standard hardware and fittings. Reducer flanges are available to connect different size ISO components. Hybrid adaptors are available to connect ISO LF components to non ISO vacuum fittings and mounts.

In general, Caburn-MDC components compare with international components using an inch-to-millimetre ratio. US sizes refer to a tube's outside diameter, whereas international sizes refer to a tube's inside diameter.

Flange size and tubing

Flange size	Tube OD
DN63LF	76 (3")
DN100LF	108 (4¼")
DN160LF	159 (6¼")
DN200LF	219 (8⅝")
DN250LF	267 (10½")
DN320LF	323 (12¾")
DN400LF	406 (16")
DN500LF	508 (20")

Claw-clamp flange

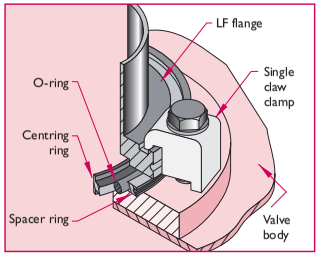
OD	Thickness	Number
95	12	3 to 4
130	12	4 to 8
180	12	4 to 8
240	12	6 to 12
290	12	6 to 12
370	17	8 to 12
450	17	8 to 16
550	17	12 to 16

Bolt flanges

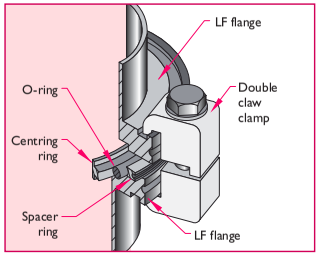
OD	Thickness	Bolt circle diameter	Holes	Bolt holes
130	12	110	8.9	4 x M8
165	12	145	8.9	8 x M8
225	16	200	10.9	8 x M10
285	16	260	10.9	12 x M10
335	16	310	10.9	12 x M10
425	20	395	14.0	12 x M12
510	20	480	14.0	16 x M12
610	20	580	14.0	16 x M12

All dimensions are nominal in millimetres unless specified

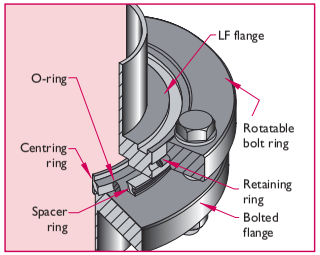
Flanges and fittings
Section 1.2
ISO LF Flanges and fittings
Introduction



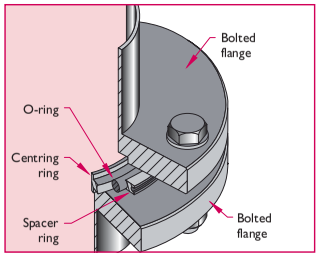
Single claw assembly



Double claw assembly

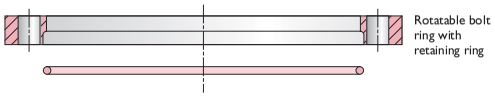


Bolted rotatable assembly

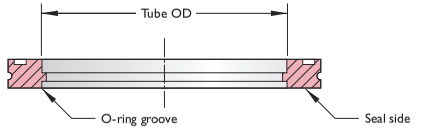


Bolted non-rotatable assembly

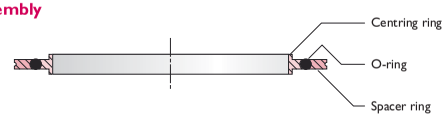
Rotatable bolt ring assembly



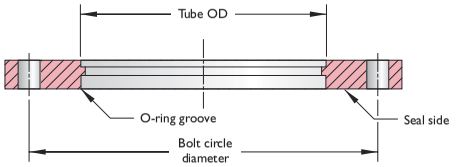
Claw-clamp flange



Centring ring assembly



Bolted flange



Intermediate hardware may be required for joining components, these have been omitted for clarity.

Inch-metric ISO comparison

Caburn-MDC	OD inches	ISO	Euro equivalent OD mm
K16	0.75	DN16KF	16.0
K25	1.00	DN25KF	25.0
K40	1.50	DN40KF	40.0
K50	2.00	DN50KF	50.0
L63	2.50	DN63LF	63.5
L100	4.00	DN100LF	102
L160	6.00	DN160LF	153
L200	8.00	DN200LF	203
L250	10.00	DN250LF	254
L320	12.75	DN320LF	316
L400	16.00	DN400LF	400
L500	20.00	DN500LF	500

Caburn-MDC reserves the right to substitute a larger-bore tube according to availability

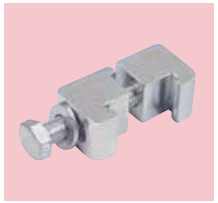
All dimensions are nominal in millimetres unless specified

Caburn-MDC Europe Limited Telephone +44 (0)870 428 7646 www.caburn.co.uk

ISO LF Flanges

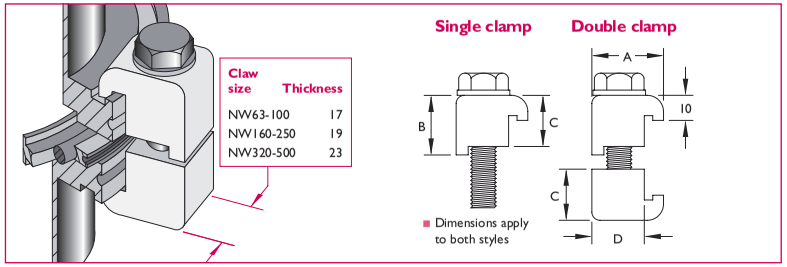
Claw-clamps and bolt rings

Claw-clamp



Features

- Fastens ISO LF flange of comparable size
- Quick make and break
- Zinc-plated steel bolt
- Aluminium claw construction
- Requires centring ring with elastomer gasket
- Other types of clamp available on request



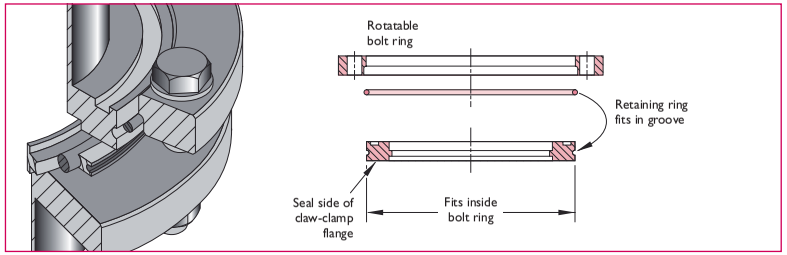
Flange size	A	B	C	D	Thread	Reference	Part number	£	€	SFr.
Single claw										
DN63-100LF	24	24	20	16.3	M8	SCC63/100	**1130000**	2	3	4
DN160-250LF	28	24	20	20.3	M10	SCC160/250	**1130001**	2	3	4
DN320-500LF	34	30	25	26.3	M12	SCC320/500	**1130002**	3	5	7
Double claw										
DN63-100LF	34	24	20	16.3	M8	DCC63/100	**1130008**	2	3	4
DN160-250LF	28	24	20	20.3	M10	DCC160/250	**1130009**	2	3	4
DN320-500LF	34	30	25	26.3	M12	DCC320/500	**1130010**	3	5	7

Double claw-clamp assemblies are commonly used for making vacuum seal connections. Assembly is simplified by the 360° rotatable flanges and the self-centring feature of the centring ring. Single claw-clamp assemblies are used to mate a clamp-style to a threaded bolt-style such as on a gate valve. The vacuum seal is made by compressing the O-ring between the mating flanges. This is done by alternately spanner-tightening opposing pairs of clamps until the first metal-to-metal contact is made between the inner surfaces of the flanges and the spacing lip of the centring ring.

Bolt ring claw-clamp to bolt flange adaptor

Features

- Converts claw-clamp flange to bolt style LF flange
- Bolt fastening
- Aluminium construction
- Includes retainer ring
- Does not include claw-clamp flange
- Requires centring ring with elastomer gasket and bolts



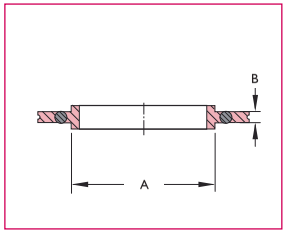
Flange size	Ring OD	Bolt holes	Hole size	Bolt circle	Thickness	Reference	Part number	£	€	SFr.
DN63LF	130	4	9	110	12	L63-RBF	**853000**	26	39	59
DN100LF	165	8	9	145	12	L100-RBF	**853001**	32	47	70
DN160LF	225	8	9	200	16	L160-RBF	**853002**	60	91	133
DN200LF	285	12	11	260	16	L200-RBF	**853003**	88	132	194
DN250LF	335	12	11	310	16	L250-RBF	**853004**	94	141	206

Slip the bolt ring over a standard claw-clamp style flange and install the retaining ring. After the bolt ring has been rotated to align the bolt holes, the vacuum seal is made by alternately spanner-tightening opposing pairs of bolts. One complete rotatable bolt ring assembly consists of one aluminium bolt ring and one retaining ring.

All dimensions are nominal in millimetres unless specified

ISO LF Flanges

Centring ring assemblies



Aluminium centring and spacer ring Viton® O-ring

- Maximum bakeout temperature 200°C
- Sustained use to 150°C

ISO LF flange	A	B	Reference	Part number	£	€	SFr.
DN63LF	70	4	L63-CR	**810000**	13	20	29
DN100LF	102	4	L100-CR	**810001**	17	26	38
DN160LF	153	4	L160-CR	**810002**	22	33	48
DN200LF	213	4	L200-CR	**810003**	32	48	70
DN250LF	261	4	L250-CR	**810004**	41	60	90
DN320LF	318	5.5	L320-CR	**810005**	74	109	163
DN400LF	400	5.5	L400-CR	**810006**	90	132	198
DN500LF	501	5.5	L500-CR	**810007**	115	169	253

Aluminium centring and spacer ring Buna-N® O-ring

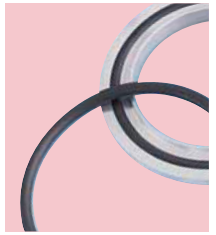
- Maximum bakeout temperature 100°C
- Sustained use to 80°C

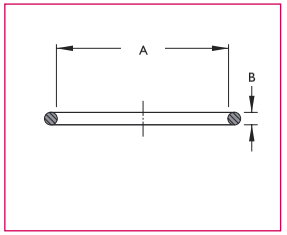
ISO LF flange	A	B	Reference	Part number	£	€	SFr.
DN63LF	70	4	L63-CRB	**810020**	21	32	46
DN100LF	102	4	L100-CRB	**810021**	26	38	57
DN160LF	153	4	L160-CRB	**810022**	32	47	70
DN200LF	213	4	L200-CRB	**810023**	41	61	90
DN250LF	261	4	L250-CRB	**810024**	60	89	132
DN320LF	318	5.5	L320-CRB	**810025**	89	130	196
DN400LF	400	5.5	L400-CRB	**810026**	93	137	205
DN500LF	501	5.5	L500-CRB	**810027**	93	137	205

Stainless steel centring with aluminium spacer ring Viton® O-ring

- Maximum bakeout temperature 200°C
- Sustained use to 150°C

ISO LF flange	A	B	Reference	Part number	£	€	SFr.
DN63LF	70	4	L63-CRSS	**810009**	38	57	86
DN100LF	102	4	L100-CRSS	**810011**	58	87	132
DN160LF	153	4	L160-CRSS	**810012**	65	98	148
DN200LF	213	4	L200-CRSS	**810013**	85	128	193
DN250LF	261	4	L250-CRSS	**810014**	100	150	227
DN320LF	318	5.5	L320-CRSS	**810015**	POA	POA	POA
DN400LF	400	5.5	L400-CRSS	**810016**	POA	POA	POA
DN500LF	501	5.5	L500-CRSS	**810017**	POA	POA	POA





Replacement Viton® O-ring

- Maximum bakeout temperature 200°C
- Sustained use to 150°C

ISO LF flange	A	B	Reference	Part number	£	€	SFr.
DN63LF	76	5.3	L63-O	**811000**	6	9	13
DN100LF	107	5.3	L100-O	**811001**	10	15	22
DN160LF	158	5.3	L160-O	**811002**	17	26	37
DN200LF	221	5.3	L200-O	**811003**	21	32	46
DN250LF	253	5.3	L250-O	**811004**	24	36	53
DN320LF	330	7.0	L320-O	**811005**	32	47	70
DN400LF	405	7.0	L400-O	**811006**	36	54	79
DN500LF	507	7.0	L500-O	**811007**	48	71	106

Replacement Buna-N® O-ring

- Maximum bakeout temperature 100°C
- Sustained use to 80°C

ISO LF flange	A	B	Reference	Part number	£	€	SFr.
DN63LF	76	4	L63-OB	**811020**	1	2	2
DN100LF	107	4	L100-OB	**811021**	2	3	4
DN160LF	158	4	L160-OB	**811022**	3	5	7
DN200LF	221	4	L200-OB	**811023**	4	6	9
DN250LF	253	4	L250-OB	**811024**	5	8	11
DN320LF	317	5.5	L320-OB	**811025**	10	15	22
DN400LF	405	5.5	L400-OB	**811026**	15	23	33
DN500LF	507	5.5	L500-OB	**811027**	20	30	44

All dimensions are nominal in millimetres unless specified

ISO LF Flanges

DN63LF

Features

- HV rated to 1x10^{-8} mbar
- High-temperature rated to 200°C
- Symmetric and non-rotatable geometry
- Rotatable bolt ring available
- Elastomer O-ring seal
- Two methods of fastening
- ISO-compatible and modified ISO design

Specifications

Material	
Flanges	304ss
Rotatable bolt ring	Aluminium
O-rings	Viton® or Buna-N® elastomer
Claw-clamps	Aluminium

Fastening	
Claw-clamp	M8, (4 required)
Bolt type	Hexagonal head, M8
Nut type	Hexagonal
Torque	Bolts: 9-14 Nm

Vacuum range	1x10^{-8} mbar

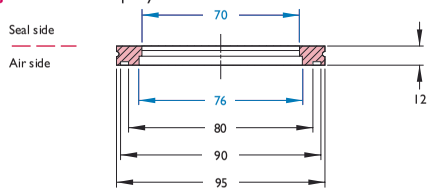
Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C

Weight	27 kg maximum

Dimensions	
Clamp style	95 OD x 76 ID maximum
Bolt style	130 OD x 76 ID maximum

HV Series

Figure 1 Claw-clamp style



Rotatable bolt ring option
Used with claw-clamp style flange

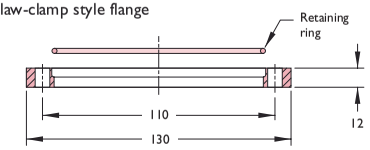


Figure 2 Bolt style

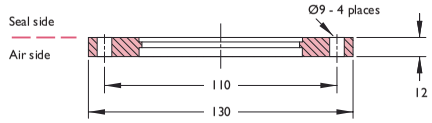
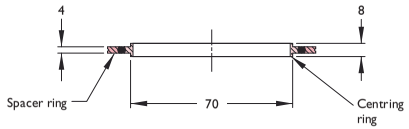


Figure 3 Centring ring assembly



Dimensions in blue are common to all flanges

Centring ring capture groove on blank flanges is 6.4 wide

A rotatable bolt ring assembly is used to add bolt holes to a standard claw-clamp style ISO LF flange. An assembly consists of one aluminium bolt ring and one retaining ring. The retaining ring fits into a groove on a claw-clamp style flange and holds the bolt ring onto the flange. Replacement retaining rings are also available separately.

Tube OD nominal	Figure	Flange reference	Fastening method	Wt kg	Reference	Part number	£	€	SFr.
–	1	Blank	Claw-clamp	0.5	L63-B	**812000**	33	49	72
–	2	Blank	Bolt	1.3	L63-BB	**852000**	48	72	106
76	2	Weld	Bolt	1.3	L63-BW	**850009**	46	68	100
76	1	Weld	Claw-clamp	0.3	L63-W	**813023**	45	68	102

Optional flange converter	Wt kg	Reference	Part number	£	€	SFr.
Rotatable bolt ring assembly	0.9	L63-RBF	**853000**	26	39	59
Retaining ring	0.1	L63-RR	**853020**	6	9	14

All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO LF Flanges

DN100LF

Features

- HV rated to 1x10^{-8} mbar
- High-temperature rated to 200°C
- Symmetric and non-rotatable geometry
- Rotatable bolt ring available
- Elastomer O-ring seal
- Two methods of fastening
- ISO-compatible and modified ISO design

Specifications

Material	
Flanges	304ss
Rotatable bolt ring	Aluminium
O-rings	Viton® or Buna-N® elastomer
Claw-clamps	Aluminium

Fastening	
Claw-clamp	M8, (8 required)
Bolt type	Hexagonal head, M8
Nut type	Hexagonal
Torque	Bolts: 9-14 Nm

Vacuum range	1x10^{-8} mbar

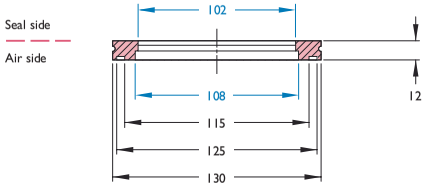
Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C

Weight	27 kg maximum

Dimensions	
Clamp style	130.0 OD x 108 ID maximum
Bolt style	165.1 OD x 108 ID maximum

HV Series

Figure 1 Claw-clamp style



Rotatable bolt ring option
Used with claw-clamp style flange

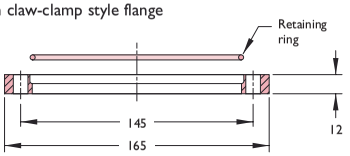


Figure 2 Bolt style

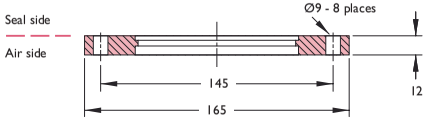
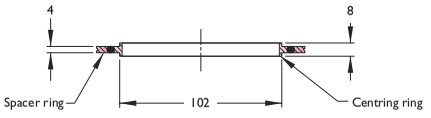


Figure 3 Centring ring assembly



Dimensions in blue are common to all flanges

Centring ring capture groove on blank flanges is 6.4 wide

A rotatable bolt ring assembly is used to add bolt holes to a standard claw-clamp style ISO LF flange. An assembly consists of one aluminium bolt ring and one retaining ring. The retaining ring fits into a groove on a claw-clamp style flange and holds the bolt ring onto the flange. Replacement retaining rings are also available separately.

Tube OD nominal	Figure	Flange reference	Fastening method	Wt kg	Reference	Part number	£	€	SFr.
–	1	Blank	Claw-clamp	0.4	L100-B	**812001**	50	75	114
–	2	Blank	Bolt	2.0	L100-BB	**852001**	79	119	175
108	2	Weld	Bolt	2.0	L100-BW	**850010**	71	106	155
108	1	Weld	Claw-clamp	0.3	L100-W	**813024**	35	53	78

Optional flange converter	Wt kg	Reference	Part number	£	€	SFr.
Rotatable bolt ring assembly	0.9	L100-RBF	**853001**	32	47	70
Retaining ring	0.1	L100-RR	**853021**	8	12	18

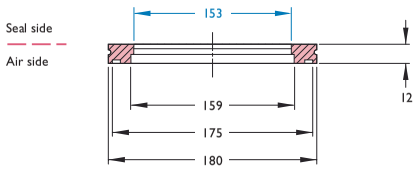
All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO LF Flanges

DN160LF

HV Series

Figure 1 Claw-clamp style



Rotatable bolt ring option
Used with claw-clamp style flange

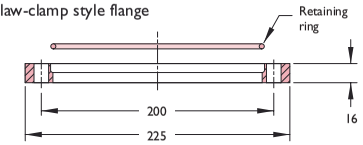


Figure 2 Bolt style

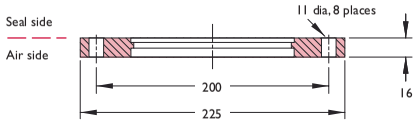
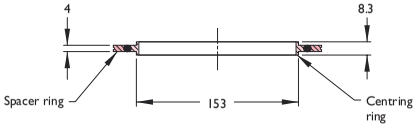


Figure 3 Centring ring assembly



Features

- HV rated to 1x10⁻⁸ mbar
- High-temperature rated to 200°C
- Symmetric and non-rotatable geometry
- Rotatable bolt ring available
- Elastomer O-ring seal
- Two methods of fastening
- ISO-compatible and modified ISO design

Specifications

Material	
Flanges	304ss
Rotatable bolt ring	Aluminium
O-rings	Viton® or Buna-N® elastomer
Claw-clamps	Aluminium
Fastening	
Claw-clamp	M10, (8 required)
Bolt type	Hexagonal head, M10
Nut type	Hexagonal
Torque	Bolts: 9-14 Nm
Vacuum range	1x10⁻⁸ mbar

Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C

Weight	5 kg maximum
Dimensions	
Clamp style	180.1 OD x 153 ID maximum
Bolt style	225.0 OD x 153 ID maximum

Dimensions in blue are common to all flanges
Centring ring capture groove on blank flanges is 6.4 wide

A rotatable bolt ring assembly is used to add bolt holes to a standard claw-clamp style ISO LF flange. An assembly consists of one aluminium bolt ring and one retaining ring. The retaining ring fits into a groove on a claw-clamp style flange and holds the bolt ring onto the flange. Replacement retaining rings are also available separately.

Tube OD nominal	Figure	Flange reference	Fastening method	Wt kg	Reference	Part number	£	€	SFr.
–	1	Blank	Claw-clamp	2.3	L160-B	**7812002**	61	92	135
–	2	Blank	Bolt	2.0	L160-BB	**7852002**	96	144	211
159	2	Weld	Bolt	2.0	L160-BW	**7850011**	98	146	215
159	1	Weld	Claw-clamp	0.8	L160-W	**7813025**	61	92	135

Optional flange converter	Wt kg	Reference	Part number	£	€	SFr.
Rotatable bolt ring assembly	1.4	L160-RBF	**7853002**	60	91	133
Retaining ring	0.2	L160-RR	**7853022**	11	17	25

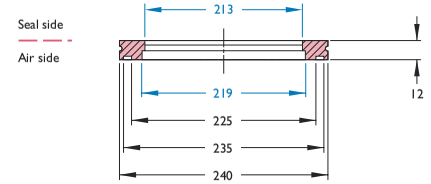
All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO LF Flanges

DN200LF

HV Series

Figure 1 Claw-clamp style



Rotatable bolt ring option
Used with claw-clamp style flange

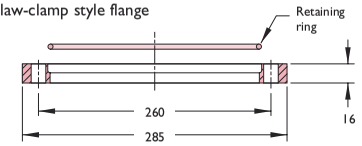


Figure 2 Bolt style

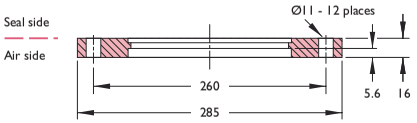
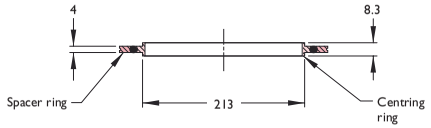


Figure 3 Centring ring assembly



Features

- HV rated to 1x10⁻⁸ mbar
- High-temperature rated to 200°C
- Symmetric and non-rotatable geometry
- Rotatable bolt ring available
- Elastomer O-ring seal
- Two methods of fastening
- ISO-compatible and modified ISO design

Specifications

Material	
Flanges	304ss
Rotatable bolt ring	Aluminium
O-rings	Viton® or Buna-N® elastomer
Claw-clamps	Aluminium
Fastening	
Claw-clamp	M10, (12 required)
Bolt type	Hexagonal head, M10
Nut type	Hexagonal
Torque	Bolts: 9-14 Nm
Vacuum range	1x10⁻⁸ mbar

Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C

Weight	1.4 kg maximum
Dimensions	
Clamp style	240 OD x 213 ID maximum
Bolt style	285 OD x 213 ID maximum

Dimensions in blue are common to all flanges
Centring ring capture groove on blank flanges is 6.4 wide

A rotatable bolt ring assembly is used to add bolt holes to a standard claw-clamp style ISO LF flange. An assembly consists of one aluminium bolt ring and one retaining ring. The retaining ring fits into a groove on a claw-clamp style flange and holds the bolt ring onto the flange. Replacement retaining rings are also available separately.

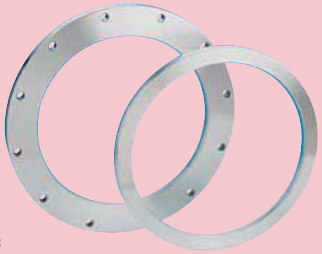
Tube OD nominal	Figure	Flange reference	Fastening method	Wt kg	Reference	Part number	£	€	SFr.
–	1	Blank	Claw-clamp	2.0	L200-B	**7812003**	101	152	223
–	2	Blank	Bolt	8.0	L200-BB	**7852003**	165	241	363
219	1	Weld	Claw-clamp	1.0	L200-W	**7813026**	88	132	194
219	2	Weld	Bolt	4.0	L200-BW	**850012**			

Optional flange converter	Wt kg	Reference	Part number	£	€	SFr.
Rotatable bolt ring assembly	2.7	L200-RBF	**7853003**	88	132	194
Retaining ring	0.2	L200-RR	**7853023**	12	18	26

All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO LF Flanges

DN250LF



ISO LF

Features

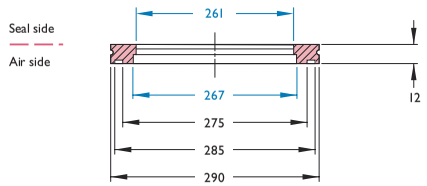
- HV rated to 1x10^{-8} mbar
- High-temperature rated to 200°C
- Symmetric and non-rotatable geometry
- Rotatable bolt ring available
- Elastomer O-ring seal
- Claw-clamp style or bolt style fastening
- ISO-compatible design

Specifications

Material			
Flanges			304ss
Rotatable bolt ring			Aluminium
O-rings			Viton® or Buna-N® elastomer
Claw-clamps			Aluminium
Fastening			
Claw-clamp			M10, (6-12 required)
Bolt type			Hexagonal head, M10
Nut type			Hexagonal
Torque			Bolts: 9-14 Nm
Vacuum range			1x10^{-8} mbar
Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C
Weight			34 kg maximum
Dimensions			
Clamp style			290 OD x 261 ID maximum
Bolt style			335 OD x 261 ID maximum

HV Series

Figure 1 Claw-clamp style



Rotatable bolt ring option
Used with claw-clamp style flange

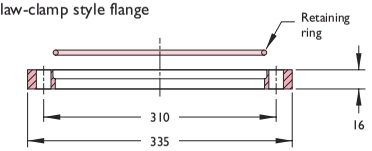


Figure 2 Bolt style

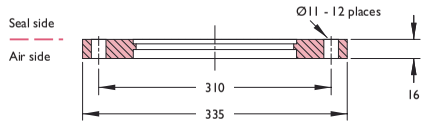
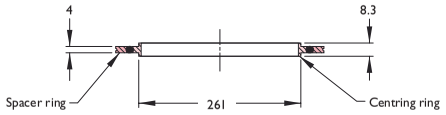


Figure 3 Centring ring assembly



Dimensions in blue are common to all flanges

Centring ring capture groove on blank flanges is 6.4 wide

A rotatable bolt ring assembly is used to add bolt holes to a standard claw-clamp style ISO LF flange. An assembly consists of one aluminium bolt ring and one retaining ring. The retaining ring fits into a groove on a claw-clamp style flange and holds the bolt ring onto the flange. Replacement retaining rings are also available separately.

Tube OD nominal	Figure	Flange reference	Fastening method	Wt kg	Reference	Part number	£	€	SFr.
–	1	Blank	Claw-clamp	6.0	L250-B	**7812004**	142	213	313
267	1	Weld	Claw-clamp	1.4	L250-W	**7813027**	102	153	225
–	2	Blank	Bolt	2.0	L250-BB	**7852004**	246	360	541
267	2	Weld	Bolt	4.3	L250-BW	**7850013**	285	428	647

Optional flange converter	Wt kg	Reference	Part number	£	€	SFr.
Rotatable bolt ring assembly	4.5	L250-RBF	**7853004**	94	141	206
Retaining ring	0.2	L250-RR	**7853024**	13	20	29

All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO LF Flanges

DN320LF

ISO LF

Features

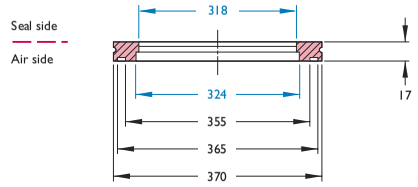
- HV rated to 1x10^{-8} mbar
- High-temperature rated to 200°C
- Symmetric and non-rotatable geometry
- Rotatable bolt ring available
- Elastomer O-ring seal
- Claw-clamp style or bolt style fastening
- ISO-compatible design

Specifications

Material			
Flanges			304ss
Rotatable bolt ring			Aluminium
O-rings			Viton® or Buna-N® elastomer
Claw-clamps			Aluminium
Fastening			
Claw-clamp			M12, (8-12 required)
Bolt type			Hexagonal head, M12
Nut type			Hexagonal
Torque			Bolts: 9-14 Nm
Vacuum range			1x10^{-8} mbar
Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C
Weight			23 kg maximum
Dimensions			
Clamp style			370 OD x 318 ID maximum
Bolt style			425 OD x 318 ID maximum

HV Series

Figure 1 Claw-clamp style



Rotatable bolt ring option
Used with claw-clamp style flange

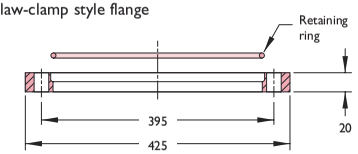


Figure 2 Bolt style

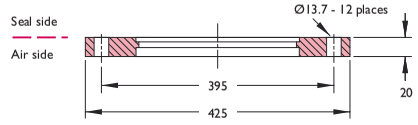
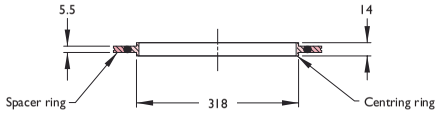


Figure 3 Centring ring assembly



Dimensions in blue are common to all flanges

Centring ring capture groove on blank flanges is 6.4 wide

A rotatable bolt ring assembly is used to add bolt holes to a standard claw-clamp style ISO LF flange. An assembly consists of one aluminium bolt ring and one retaining ring. The retaining ring fits into a groove on a claw-clamp style flange and holds the bolt ring onto the flange. Replacement retaining rings are also available separately.

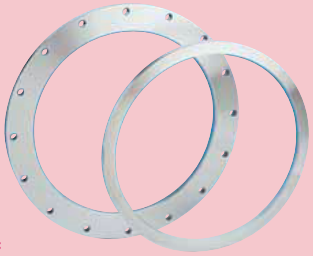
Tube OD nominal	Figure	Flange reference	Fastening method	Wt kg	Reference	Part number	£	€	SFr.
–	1	Blank	Claw-clamp	14.5	L320-B	**7812005**	247	371	544
324	1	Weld	Claw-clamp	3.6	L320-W	**7813005**	214	320	470
–	2	Blank	Bolt	23.0	L320-BB	**7852005**	364	532	801
324	2	Weld	Bolt	11.4	L320-BW	**7850005**	513	750	1129

Optional flange converter	Wt kg	Reference	Part number	£	€	SFr.
Rotatable bolt ring assembly	5.4	L320-RBF	**7853005**	205	308	465
Retaining ring	0.2	L320-RR	**7853025**	21	32	46

All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO LF Flanges

DN400LF



ISO LF

Features

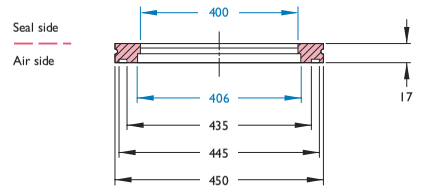
- HV rated to $1x10^{-8}$ mbar
- High-temperature rated to 200°C
- Symmetric and non-rotatable geometry
- Rotatable bolt ring available
- Elastomer O-ring seal
- Claw-clamp style or bolt style fastening
- ISO-compatible design

Specifications

Material			
Flanges			304ss
Rotatable bolt ring			Aluminium
O-rings			Viton® or Buna-N® elastomer
Claw-clamps			Aluminium
Fastening			
Claw-clamp			M12, (8-16 required)
Bolt type			Hexagonal head, M12
Nut type			Hexagonal
Torque			Bolts: 9-14 Nm
Vacuum range			$1x10^{-8}$ mbar
Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C
Weight			34 kg maximum
Dimensions			
Clamp style			450 OD x 400 ID maximum
Bolt style			510 OD x 400 ID maximum

HV Series

Figure 1 Claw-clamp style



Rotatable bolt ring option
Used with claw-clamp style flange

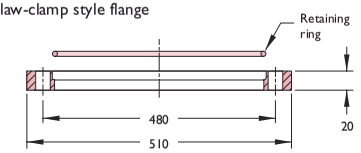


Figure 2 Bolt style

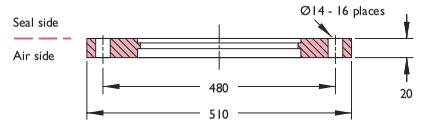
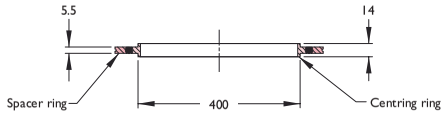


Figure 3 Centring ring assembly



Dimensions in blue are common to all flanges

Centring ring capture groove on blank flanges is 6.4 wide

A rotatable bolt ring assembly is used to add bolt holes to a standard claw-clamp style ISO LF flange. An assembly consists of one aluminium bolt ring and one retaining ring. The retaining ring fits into a groove on a claw-clamp style flange and holds the bolt ring onto the flange. Replacement retaining rings are also available separately.

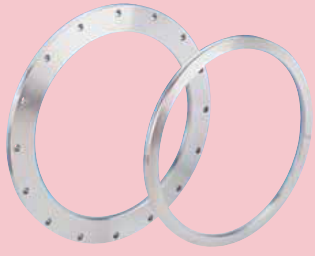
Tube OD nominal	Figure	Flange reference	Fastening method	Wt kg	Reference	Part number	£	€	SFr.
–	1	Blank	Claw-clamp	20.5	L400-B	**7812006**	313	470	689
406	1	Weld	Claw-clamp	4.5	L400-W	**7813006**	320	468	704
–	2	Blank	Bolt	34.0	L400-BB	**7852006**	506	740	1113
406	2	Weld	Bolt	11.4	L400-BW	**7850006**	508	742	1118

Optional flange converter	Wt kg	Reference	Part number	£	€	SFr.
Rotatable bolt ring assembly	13.6	L400-RBF	**7853006**	288	432	654
Retaining ring	0.2	L400-RR	**7853026**	21	32	46

All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO LF Flanges

DN500LF



ISO LF

Features

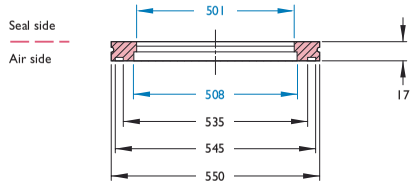
- HV rated to $1x10^{-8}$ mbar
- High-temperature rated to 200°C
- Symmetric and non-rotatable geometry
- Rotatable bolt ring available
- Elastomer O-ring seal
- Claw-clamp style or bolt style fastening
- ISO-compatible design

Specifications

Material			
Flanges			304ss
Rotatable bolt ring			Aluminium
O-rings			Viton® or Buna-N® elastomer
Claw-clamps			Aluminium
Fastening			
Claw-clamp			M12, (12-16 required)
Bolt type			Hexagonal head, M12
Nut type			Hexagonal
Torque			Bolts: 9-14 Nm
Vacuum range			$1x10^{-8}$ mbar
Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C
Weight			43 kg maximum
Dimensions			
Clamp style			550 OD x 501 ID maximum
Bolt style			610 OD x 501 ID maximum

HV Series

Figure 1 Claw-clamp style



Rotatable bolt ring option
Used with claw-clamp style flange

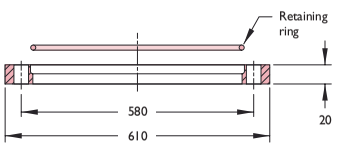


Figure 2 Bolt style

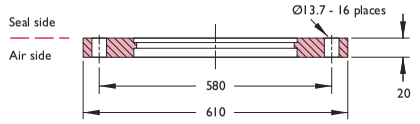
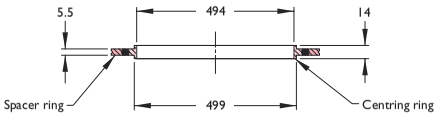


Figure 3 Centring ring assembly



Dimensions in blue are common to all flanges

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A rotatable bolt ring assembly is used to add bolt holes to a standard claw-clamp style ISO LF flange. An assembly consists of one aluminium bolt ring and one retaining ring. The retaining ring fits into a groove on a claw-clamp style flange and holds the bolt ring onto the flange. Replacement retaining rings are also available separately.

Tube OD nominal	Figure	Flange reference	Fastening method	Wt kg	Reference	Part number	£	€	SFr.
–	1	Blank	Claw-clamp	31.4	L500-B	**7812007**	615	923	1396
508	1	Weld	Claw-clamp	5.4	L500-W	**7813007**	595	893	1351
–	2	Blank	Bolt	43.0	L500-BB	**7852007**	784	1145	1725
508	2	Weld	Bolt	25.0	L500-BW	**7850007**	774	1130	1703

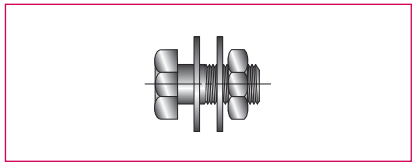
Optional flange converter	Wt kg	Reference	Part number	£	€	SFr.
Rotatable bolt ring assembly	16.0	L500-RBF	**7853007**	490	735	1112
Retaining ring	0.2	L500-RR	**7853027**	30	45	68

All dimensions are nominal in millimetres unless specified Weights given are approximate

ISO LF Fittings

Bolt sets and replacement retaining rings

Bolt sets for two bolted flanges

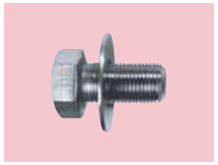


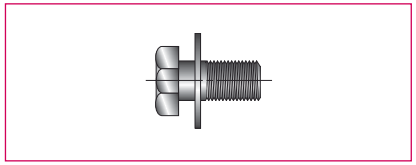
Features

- Nuts and washers included

ISO LF Flange	Bolt size	Number in set	Reference	Part number	£	€	SFr.
Stainless steel							
DN63LF	M8 X 40	25	M8-40	**1113025**	21	31	46
DN100LF	M8 X 40	25	M8-40	**1113025**	21	31	46
DN160LF	M10 X 50	12	M10-50 (12)	**1113040**	17	26	37
DN200LF	M10 X 50	12	M10-50 (12)	**1113040**	17	26	37
DN250LF	M10 X 50	12	M10-50 (12)	**1113040**	17	26	37
DN300LF	M12 X 60	16	M12-60 (16)	**1113050**	42	62	92
DN400LF	M12 X 60	16	M12-60 (16)	**1113050**	42	62	92
DN500LF	M12 X 60	16	M12-60 (16)	**1113050**	42	62	92

Bolt sets for joining bolted flanges to tapped flanges



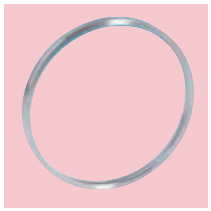


Features

- Washer included

ISO LF Flange	Bolt size	Number in set	Reference	Part number	£	€	SFr.
Stainless steel							
DN63LF	M8 x 20	25	M8-20	**1113009**	16	24	35
DN100LF	M8 x 20	25	M8-20	**1113009**	16	24	35
DN160LF	M10 x 30	12	M10-30 (12)	**1113011**	12	18	26
DN200LF	M10 x 30	12	M10-30 (12)	**1113011**	12	18	26
DN250LF	M10 x 30	12	M10-30 (12)	**1113011**	12	18	26
DN320LF	M12 x 40	16	M12-40 (16)	**1113012**	32	48	70
DN400LF	M12 x 40	16	M12-40 (16)	**1113012**	32	48	70
DN500LF	M12 x 40	16	M12-40 (16)	**1113012**	32	48	70

Replacement retaining rings



ISO LF Flange	Reference	Part number	£	€	SFr.
Steel For rotatable bolt rings					
DN63LF	L63-RR	**7853020**	6	9	14
DN100LF	L100-RR	**7853021**	8	12	18
DN160LF	L160-RR	**7853022**	11	17	25
DN200LF	L200-RR	**7853023**	12	18	26
DN250LF	L250-RR	**7853024**	13	20	29
DN320LF	L320-RR	**7853025**	21	32	46
DN400LF	L400-RR	**7853026**	21	32	46
DN500LF	L500-RR	**7853027**	30	45	68

All dimensions are nominal in millimetres unless specified

Flanges and fittings

ISO KF and LF fittings

Introduction

UHV Series

Description

Caburn-MDC ISO KF and ISO LF tube fittings are convenient building-block components. They offer great flexibility in the design and construction of high vacuum systems. All fittings are fabricated from 304 stainless steel drawn and welded vacuum tubing. Flanges do not need to be rotatable since they are completely symmetric. If desired, rotatable bolt ring assemblies can be retrofitted to existing claw-clamp style flanges to add bolt holes to ISO LF fittings.

Reducers are used for a change in size of flanges within a single method of sealing, such as elastomer sealing of ISO KF and LF flanges.

Note Zero-length reducers are not possible with ISO style flanges.

Features

- High vacuum rated to $1x10^{-8}$ mbar
- Temperature rated to 200°C maximum
- Symmetric, non-rotatable geometries
- Rotatable bolt rings available for LF sizes
- Viton® or Buna-N® O-rings
- Standard matt finish[1]
- ISO compatible design range of KF and LF sizes

Specifications

Material

Flanges	304ss
Finish[1]	Standard matt finish
Vacuum range	$1x10^{-8}$ mbar
Fittings leak test	$2x10^{-10}$ cc/sec of He

Temperature range	Minimum	Intermittent	Sustained
Viton®	-20°C	200°C	150°C
Buna-N®	-20°C	100°C	80°C
Silicone	-50°C	200°C	150°C

Weight and dimensions See table

[1] Caburn-MDC reserves the right to use matt or polished tube at their discretion

Inch-metric ISO comparison

Caburn-MDC	OD inches	OD mm	ISO	OD mm
K16	0.75	19	NW16	20.0
K25	1.0	25	NW25	25.0
K40	1.5	38	NW40	40.0
K50	2.0	50	NW50	50.0
L63	2.9	76	NW63	63.5
L100	4.3	108	NW100	102
L160	6.3	159	NW160	153
L200	8.6	219	NW200	212
L250	10.5	267	NW250	254
L320	12.8	324	NW320	316
L400	16.0	406	NW400	400
L500	20.0	508	NW500	500

Sizes given above are nominal

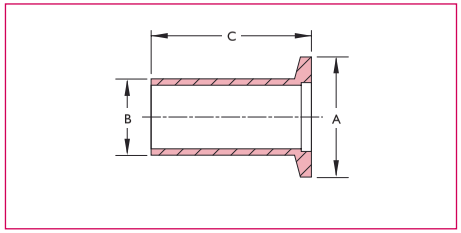
All dimensions are nominal in millimetres unless specified

Caburn-MDC Europe Limited Telephone +44 (0)870 428 7646 www.caburn.co.uk

ISO KF and LF fittings

Half nipples

KF Clamp style

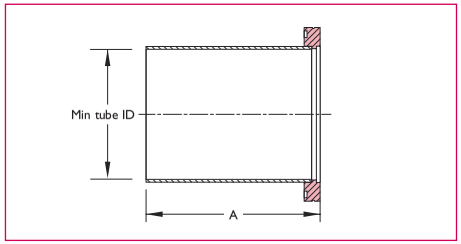


Features

- DN16KF through to DN50KF sizes
- Requires hinged clamp or bulkhead clamp
- Custom lengths available on request

Flange ISO ref.	Flange OD	Tube OD	Tube length	Reference	Part number	£	€	SFr.
Short								
K16-SWS	30	20	30	K16-SWS	**7715101**	4	6	9
K25-SWS	40	28	30	K25-SWS	**7715102**	5	8	11
K40-SWS	55	44.5	30	K40-SWS	**7715103**	7	11	16
K50-SWS	75	57	30	K50-SWS	**7715104**	12	18	27
Long								
K16-LWS	30	20	70	K16-LWS	**7715106**	7	11	16
K25-LWS	40	28	70	K25-LWS	**7715107**	6	9	14
K40-LWS	55	44.5	70	K40-LWS	**7715108**	7	11	16
K50-LWS	75	57	70	K50-LWS	**7715109**	14	21	32

LF Clamp style



Features

- DN63LF through to DN500LF sizes
- Requires claw-clamps – see individual flange size
- Custom lengths available on request

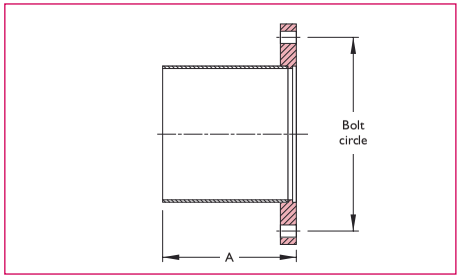
Flange ISO ref.	Min. tube ID	Min. A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel								
DN63LF	60	100	0.5	LST-63-T	**7820009**	49	74	108
DN100LF	97	100	0.9	LST-100-T	**7820010**	60	90	132
DN160LF	145	100	1.5	LST-160-T	**7820011**	87	130	191
DN200LF	197	100	2.0	LST-200-T	**7820012**	137	205	301
DN250LF	248	100	4.0	LST-250-T	**7820013**	160	240	351
DN320LF	314	100	5.5	LST320-T	**7820005**	316	474	695
DN400LF	397	100	6.0	LST400-T	**7820006**	491	717	1080
DN500LF	497	100	8.0	LST500-T	**7820007**	609	890	1340

Caburn-MDC reserves the right to substitute a larger-bore tube according to availability

ISO KF and LF fittings

Half nipples and nipples

LF Bolt style



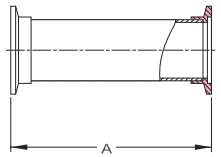
Features

- DN63LF through to DN500LF sizes
- Requires bolts – see individual flange size
- Custom lengths available on request

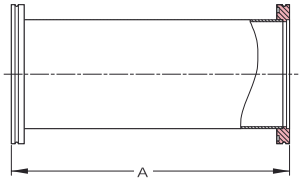
Flange ISO ref.	No. of bolt holes	Bolt holes size	BC	Tube/ cut and roll min. ID	Min. A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel											
DN63LF	4	M8	110	60	100	1.8	L63-BL	**7851009**	59	88	129
DN100LF	8	M8	145	97	100	2.3	L100-BL	**7851010**	93	140	205
DN160LF	8	M10	200	145	100	3.2	L160-BL	**7851011**	139	209	306
DN200LF	12	M10	260	197	100	5.5	L200-BL	**7851012**	220	330	499
DN250LF	12	M10	310	248	100	6.8	L250-BL	**7851013**	300	450	681
DN320LF	12	M12	395	314	100	15.5	L320-BL	**7851005**	625	938	1375
DN400LF	16	M12	480	397	100	18.0	L400-BL	**7851006**	804	1205	1768
DN500LF	16	M12	580	498	100	32.5	L500-BL	**7851007**	988	1482	2174

Straight tube

ISO KF



ISO LF



Features

- DN16KF through to DN250LF sizes
- Welded construction
- Custom lengths available on request

Flange ISO ref.	Min. tube ID	Min. A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel								
DN16KF	16	80	0.2	KST-16	**7721000**	22	33	49
DN25KF	22	100	0.2	KST-25	**7721001**	25	38	55
DN40KF	34	130	0.2	KST-40	**7721002**	33	49	72
DN50KF	47	140	0.4	KST-50	**7721003**	43	64	94

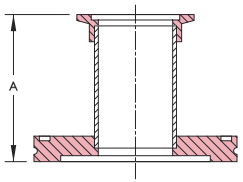
Stainless steel								
DN63LF	60	100	0.9	LST63	**7821009**	69	103	151
DN100LF	97	100	1.8	LST100	**7821010**	132	198	290
DN160LF	145	100	4.5	LST160	**7821011**	174	260	382
DN200LF	197	100	5.5	LST200	**7821012**	246	369	541
DN250LF	248	100	7.3	LST250	**7821013**	311	467	684

ISO KF and LF fittings

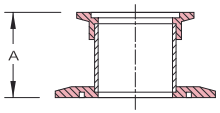
Nipple reducers

Straight tube

ISO LF to ISO KF



ISO KF to ISO KF



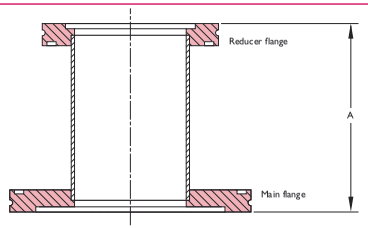
Features

- Main flange DN25KF to DN100LF
- Welded construction
- Custom lengths available on request

Flange ISO ref.	Nominal tube size	Nominal tube ID	A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel									
DN25KF	DN16KF	16	28	0.2	KST-25-16	**7732000**	16	24	35
DN40KF	DN16KF	16	28	0.2	KST-40-16	**7732001**	18	27	39
DN40KF	DN25KF	24	28	0.2	KST-40-25	**7732003**	19	28	41
DN50KF	DN16KF	16	28	0.3	KST-50-16	**7732002**	19	28	41
DN50KF	DN25KF	24	28	0.3	KST-50-25	**7732004**	45	68	102
DN50KF	DN40KF	40	28	0.3	KST-50-40	**7732005**	48	72	109
Stainless steel									
DN63LF	DN40KF	34	50	0.7	LST63-K40	**1130285**	56	84	123
DN63LF	DN50KF	47	50	1.2	LST63-K50	**1130286**	67	100	147
DN100LF	DN50KF	47	50	1.2	LST100-K50	**1130287**	106	159	233

Straight tube

ISO LF to ISO LF



Features

- Main flange DN100LF through to DN250LF
- Welded construction
- Custom lengths available on request

Main flange ISO ref.	Reducer flange ISO ref.	Minimum tube ID	A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel									
DN100LF	DN63LF	60	50	2.0	LST100-63	**7832011**	88	132	194
DN160LF	DN63LF	60	50	2.7	LST160-63	**7832012**	120	180	264
DN160LF	DN100LF	97	50	4.8	LST160-100	**7832013**	127	191	280
DN200LF	DN160LF	145	90	6.0	LST200-160	**7832014**	257	386	566
DN250LF	DN200LF	197	90	8.0	LST250-200	**7832015**	363	545	799

Application note Zero-length reducers are not available with ISO style connection

Caburn-MDC reserves the right to substitute a larger-bore tube according to availability

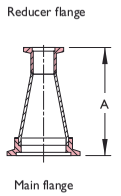
Flanges and fittings

ISO KF and LF fittings

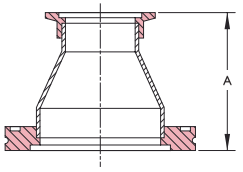
Nipple reducers and elbows

Conical

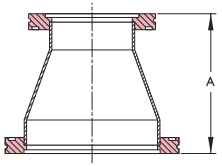
ISO KF to ISO KF



ISO LF to ISO KF



ISO LF to ISO LF



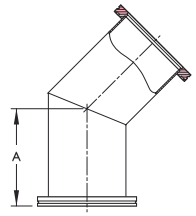
Features

- Main flange DN25KF through to DN160LF sizes

Main flange ISO ref.	Main flange OD	Tube ISO ref.	Reducer flange OD	OD	Wall	A	Wt kg	Reference	Part number	£	€	SFr.
DN25KF	40	DN16KF	30	25 - 19	1.7	52	0.4	K100XK075FCR	**732006**	51	77	116
DN40KF	55	DN16KF	30	38 - 19	1.7	78	0.5	K150XK075FCR	**732007**	55	83	125
DN40KF	55	DN25KF	40	38 - 25	1.7	70	0.5	K150XK100FCR	**732010**	58	87	132
DN50KF	75	DN25KF	40	50 - 25	1.7	70	0.5	K200XK100FCR	**732008**	66	99	150
DN50KF	75	DN40KF	55	50 - 38	1.7	71	0.5	K200XK150FCR	**732009**	66	99	150
DN63LF	95	DN40KF	55	63 - 38	1.7	72	0.7	L250XK150FCR	**840016**	145	218	329
DN100LF	130	DN50KF	75	100 - 50	1.7	104	1.6	L400XK200FCR	**840020**	188	282	427
DN100LF	130	DN63LF	95	102 - 63	1.7	105	2.0	LCR100-63	**832007**	196	287	431
DN160LF	180	DN100LF	130	152 - 102	3.0	241	2.3	LCR160-100	**832010**	337	493	741

45° with tangents

ISO LF Mitred



Features

- Welded construction
- Custom lengths available on request

Flange ISO ref.	Flange OD	Bend type	Minimum tube ID	A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel										
DN63LF	95	Mitre	60	82	0.9	LL45-63	**7823008**	173	253	381
DN100LF	130	Mitre	97	128	2.7	LL45-100	**7823009**	257	376	565

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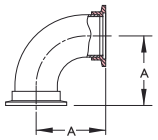
ISO KF and LF fittings

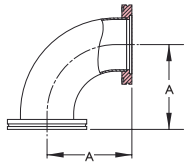
Elbows

90°

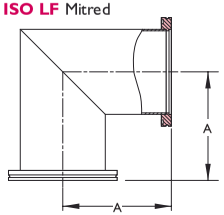
ISO KF Radial



ISO LF Radial



ISO LF Mitred



Features

- DN16KF through to DN250LF sizes
- Radial or mitred tube
- Welded construction
- Custom lengths available on request

Flange ISO ref.	Flange OD	Bend type	Min. tube ID	A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel										
DN16KF	30	Radial	16	40	0.2	KL-16	**7723000**	20	31	45
DN25KF	40	Radial	22	50	0.2	KL-25	**7723001**	21	32	47
DN40KF	55	Radial	34	65	0.2	KL-40	**7723002**	22	33	48
DN50KF	75	Radial	47	70	0.4	KL-50	**7723003**	45	68	102
Stainless steel										
DN63LF	95	Radial	60	88	1.0	LL63	**7823000**	82	123	180
DN100LF	130	Radial	97	108	2.7	LL100R	**7823018**	200	300	467
DN160LF	180	Mitred	145	138	4.5	LL160	**7823002**	299	449	658
DN200LF	240	Mitred	197	178	6.4	LL200	**7823003**	423	634	930
DN250LF	290	Mitred	248	208	8.6	LL250	**7823004**	595	892	1308

Caburn-MDC reserves the right to substitute a larger-bore tube according to availability

Flanges and fittings

Section 1.2

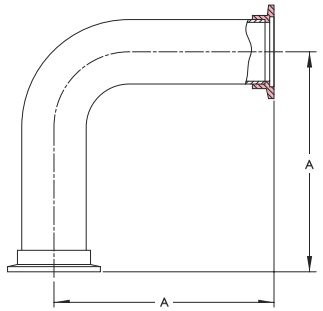
ISO KF and LF fittings

Elbows

90° with tangents

Features

- DN16KF through to DN100LF sizes
- Radial tube
- Welded construction
- Custom lengths available on request

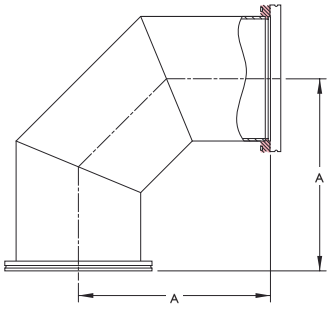


Flange ISO ref.	Flange OD	Nominal tube ID	A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel									
DN16KF	30	16	49	0.2	KLL-16	**7723018**	41	62	90
DN25KF	40	22	57	0.8	KLL-25	**7723019**	50	75	110
DN40KF	55	34	80	1.0	KLL-40	**7723020**	56	84	124
DN50KF	75	48	108	1.0	KLL-50	**7723021**	66	99	146
Stainless steel									
DN63LF	95	60	138	1.4	L63-2LL	**823020**	70	105	159
DN100LF	130	97	217	2.3	L100-2LL	**823022**	280	420	636

High conductance

Features

- Mitred tube
- Welded construction
- Custom lengths available on request



Flange ISO ref.	Flange OD	Nominal tube ID	A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel									
DN160LF	180	145	235	5.0	LL160-HC	**823013**	380	570	863

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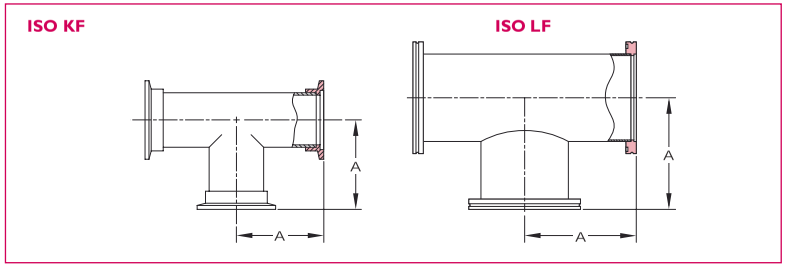
ISO KF and LF fittings

Tees and reducing tees

Tee

Features

- DN16KF through to DN250LF sizes
- Custom lengths available on request

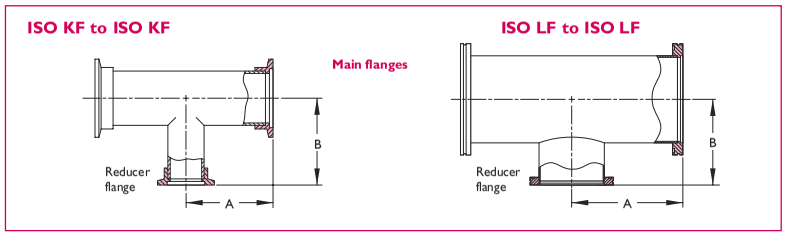


Flange ISO ref.	Flange OD	Nominal tube ID	A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel									
DN16KF	30	16	40	0.2	KT-16	**7724000**	39	59	89
DN25KF	40	22	50	0.2	KT-25	**7724001**	39	59	89
DN40KF	55	34	65	0.2	KT-40	**7724002**	39	59	89
DN50KF	75	48	70	0.4	KT-50	**7724003**	54	81	123
Stainless steel									
DN63LF	95	60	88	1.4	LT63	**7824031**	127	191	280
DN100LF	130	97	108	3.6	LT100	**7824032**	178	267	392
DN160LF	180	145	138	6.0	LT160	**7824033**	368	552	809
DN200LF	240	197	178	8.2	LT200	**7824034**	388	581	853
DN250LF	290	248	208	10.8	LT250	**7824035**	587	880	1291

Reducing tees

Features

- Main flange DN25KF through DN160LF sizes
- Custom lengths available on request



Main flange ISO ref.	Nom. tube ID	A	Reducer flange ISO ref.	Nom. tube ID	B	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel											
DN25KF	22	50	DN16KF	16	40	0.5	KRT25-16	**724004**	24	36	53
DN40KF	34	65	DN16KF	16	40	0.5	KRT40-16	**724005**	38	57	84
DN40KF	34	65	DN25KF	22	50	0.5	KRT40-25	**724006**	38	57	86
DN50KF	48	70	DN16KF	16	50	1.0	KRT50-16	**724007**	38	57	86
DN50KF	48	70	DN25KF	22	65	1.0	KRT50-25	**724008**	38	57	83
DN50KF	48	70	DN40KF	34	65	1.0	KRT50-40	**724009**	50	75	110
Stainless steel											
DN100LF	97	108	DN63LF	60	107	3.2	LRT100-63	**7824047**	195	292	428
DN160LF	145	138	DN100LF	97	130	5.5	LRT160-100	**7824050**	364	546	800

Caburn-MDC reserves the right to substitute a larger-bore tube according to availability

All dimensions are nominal in millimetres unless specified Weights given are approximate

Flanges and fittings

ISO KF and LF fittings

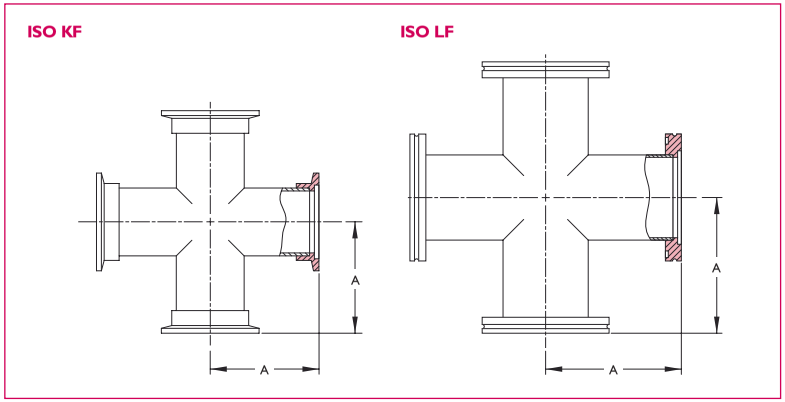
Four-way crosses

Four-way crosses

Note
Spherical main body on some units

Features

- DN16KF through to DN250LF sizes
- Body type dependent on tube size
- Custom lengths available on request



Flange ISO ref.	Flange OD	Body type	Min. tube/ cut and roll[1] ID	Sphere ID	A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel											
DN16KF	30	Tube	16	–	40	0.2	KX4-16	**7725000**	50	75	110
DN25KF	40	Tube	22	–	50	0.4	KX4-25	**7725001**	59	89	130
DN40KF	55	Tube	34	–	65	0.4	KX4-40	**7725002**	77	116	169
DN50KF	75	Tube	48	–	70	0.8	KX4-50	**7725003**	100	150	220
Stainless steel											
DN63LF	95	Tube	60	–	88	2.7	LX4-63	**7825031**	189	283	415
DN100LF	130	Sphere	97	152	130	4.5	LX4-100S	**7825032**	268	402	589
DN160LF	180	Sphere	145	222	160	6.8	LX4-160S	**7825033**	520	781	1145
DN200LF	240	Sphere	197	299	197	9.5	LX4-200S	**7825034**	669	1003	1471
DN250LF	290	Sphere	248	400	248	11.8	LX4-250S	**7825035**	852	1278	1875

[1] Cut and roll is a flat sheet of material cut to size and rolled to form a tube
The tube is finished with a continuous weld along the inside seam
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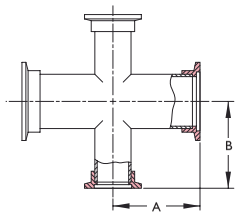
ISO KF and LF fittings

Reducing crosses

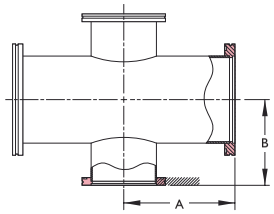
Features

- Main flange DN25KF through to DN160LF sizes
- Custom lengths available on request

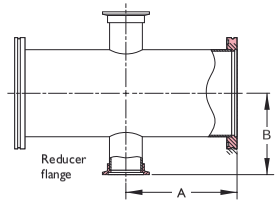
ISO KF to ISO KF



ISO LF to ISO LF



ISO LF to ISO KF



Main flange ISO ref.	Min. tube ID	A	Reducer flange ISO ref.	Min. tube ID	B	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel											
DN25KF	22	50	DN16KF	16	40	0.4	KRX25-16	**7725010**	67	100	147
DN40KF	34	65	DN16KF	16	40	0.4	KRX40-16	**7725011**	69	102	152
DN40KF	34	65	DN25KF	22	50	0.4	KRX40-25	**7725012**	86	129	195
DN50KF	48	70	DN25KF	22	50	1.0	KRX50-25	**7725013**	102	150	224
DN50KF	48	70	DN40KF	34	65	1.0	KRX50-40	**7725014**	107	157	235
Stainless steel											
DN63LF	60	102	DN40KF	34	76	1.0	L63-4-K40	**7825041**	250	375	550
DN63LF	60	102	DN50KF	48	92	1.0	L63-4-K50	**7825042**	272	408	598
DN100LF	97	130	DN50KF	48	111	2.3	L100-4-K50	**7825046**	400	600	880
Stainless steel											
DN100LF	97	108	DN63LF	60	107	4.0	L100-4-L63	**7825047**	472	708	1038
DN160LF	145	138	DN100LF	97	131	6.8	L160-4-L100	**7825050**	844	1266	1857

Caburn-MDC reserves the right to substitute a larger bore tube according to availability

ISO KF and LF fittings

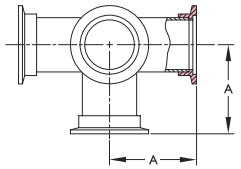
Five-way and six-way crosses

Five-way crosses

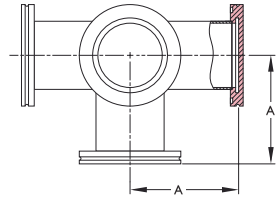
Features

- DN16KF through to DN160LF sizes
- Custom lengths available on request

ISO KF



ISO LF



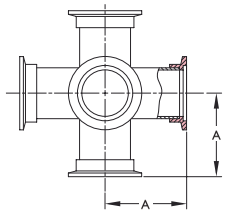
Flange ISO ref.	Flange OD	Minimum ID	Body type	A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel										
DN16KF	30	16	Tube	40	0.2	KX5-16	**7726000**	61	91	134
DN25KF	40	22	Tube	50	0.4	KX5-25	**7726001**	71	106	155
DN40KF	55	38	Tube	65	0.4	KX5-40	**7726002**	113	170	249
Stainless steel										
DN63LF	95	60	Tube	88	3.6	LX5-63	**7826009**	371	557	817
DN100LF	130	97	Tube	108	5.5	LX5-100	**7826010**	515	773	1134
DN160LF	180	145	Tube	138	8.2	LX5-160	**7826011**	831	1247	1828

Six-way crosses

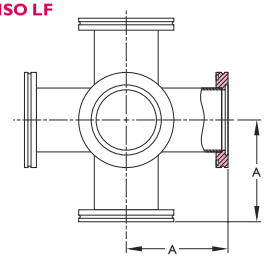
Features

- DN16KF through to DN250LF sizes
- Body type dependent on tube size
- Custom lengths available on request

ISO KF



ISO LF



Flange ISO ref.	Flange OD	Tube min. ID/ cut and roll[1]	Body type	Body dimen. ID	A	Wt kg	Reference	Part number	£	€	SFr.
Stainless steel											
DN16KF	30	16	Tube	–	40	0.2	KX6-16	**7727000**	78	117	172
DN25KF	40	22	Tube	–	50	0.4	KX6-25	**7727001**	93	139	204
DN40KF	55	34	Tube	–	65	0.4	KX6-40	**7727002**	134	201	295
Stainless steel											
DN63LF	95	60	Tube	–	88	4.0	LX6-63	**7827009**	310	465	704
DN100LF	130	97	Tube	–	108	6.0	LX6-100	**7827010**	597	896	1314
DN160LF	180	145	Sphere	222	138	8.6	LX6-160	**7827011**	1241	1861	2730
DN200LF	240	197	Sphere	298	178	10.5	LX6-200	**7827012**	1483	2224	3262
DN250LF	286	248	Sphere	400	208	15.0	LX6-250	**7827013**	1948	2921	4285

[1] Cut and roll is a flat sheet of material cut to size and rolled to form a tube
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