aerospace
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Installation guide
Parflange® F37 system
Flare Flanges

Parker

ENGINEERING YOUR SUCCESS.

For your safety!

Under certain circumstances, tube fittings can be subjected to extreme loadings such as vibration and uncontrolled pressure peaks.

Only by using genuine Parker components and following Parker assembly instructions can you be assured of the reliability and safety of the products and their conformity to the applicable standards.

Failure to follow this rule can adversely affect the functional safety and reliability of products, cause personal injury, property damage, and result in loss of your guarantee rights.

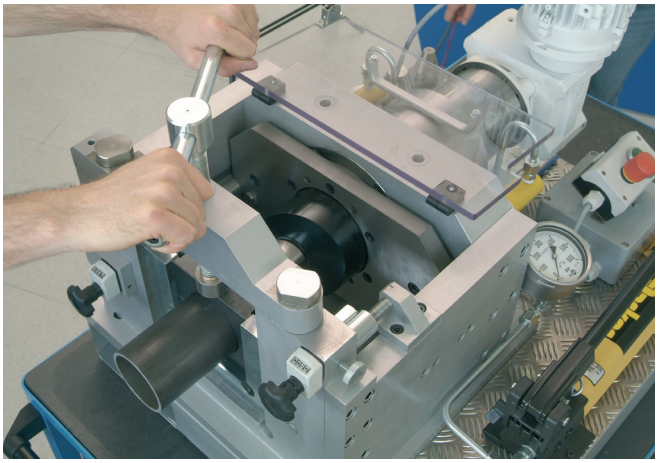
Subject to alteration

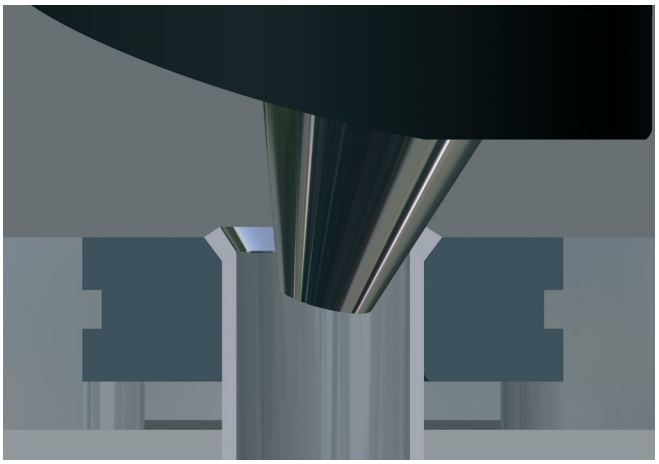
These guidelines are based on the experience of Parker Hannifin in manufacturing and assembly of the F37 Parflange and Retaining Ring system. For special applications (special sealing arrangements, non-conductive connections, special materials, etc.) please contact Parker Hannifin for further instructions. In order to achieve the integrity required in any piping system it is necessary that operators are fully trained and conversant with the tools and machines to be used. Parker Hannifin is able to provide training and instruction as well as installation supervision if required.

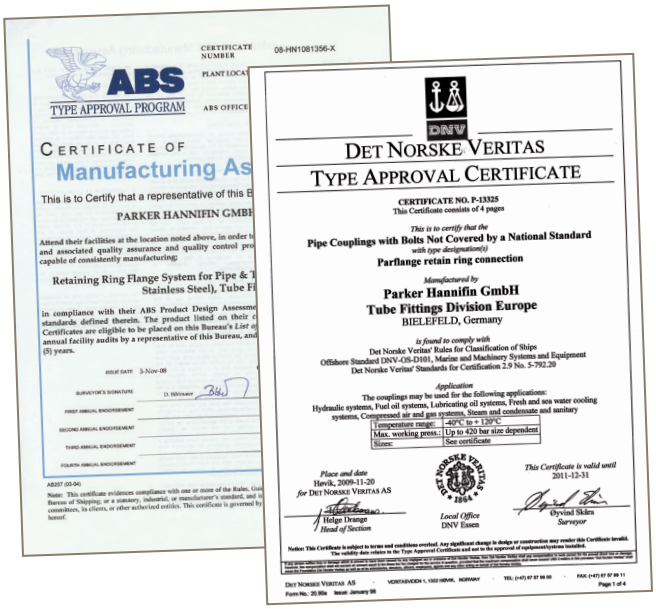
Parflange® technology
Parker is the inventor of the Parflange® system and knows well how to deal with flared tubes and flanged connectors. The excellent sealing performance and the high mechanical strength of Parflange® technology are achieved by continuous orbital tube forming. Proven millions of times, this connector system is backed by decades of experience. The Parflange® system belongs to Parker's leak-free Dry Technology programme. Dry Technology stands for leak-free systems with soft sealing at every connection point.

Parflange® F37
The Parflange® F37 flanged connector system is utilising this orbital tube forming technology for tubing assemblies from 16 to 165 mm (1/2" to 6" Flanges) outside diameter.
It is intended for tube wall thickness up to 9 mm and pressure ratings up to 420 bar.
For those connections, where there is no possibility to assemble a pre-flared tube or where manufacturing is limited, Parker provides the F37 Retaining Ring system. This system utilizes a Retaining Ring for flange retention along with a highly-engineered seal carrier for leak free performance. It is available as a high pressure version from 1 1/2" to 10" and as a newly developed SAE 1000 (50-70 bar) version.
The Parflange® F37 system corresponds to hole patterns according to ISO 6162-1; SAE J518; bore pattern 3000 (code 61), ISO 6162-2; bore pattern 6000 (code 62) and also ISO 6164 bore pattern.

The Parflange F37 flange system is type approved by DNV, ABS and other major classification companies.

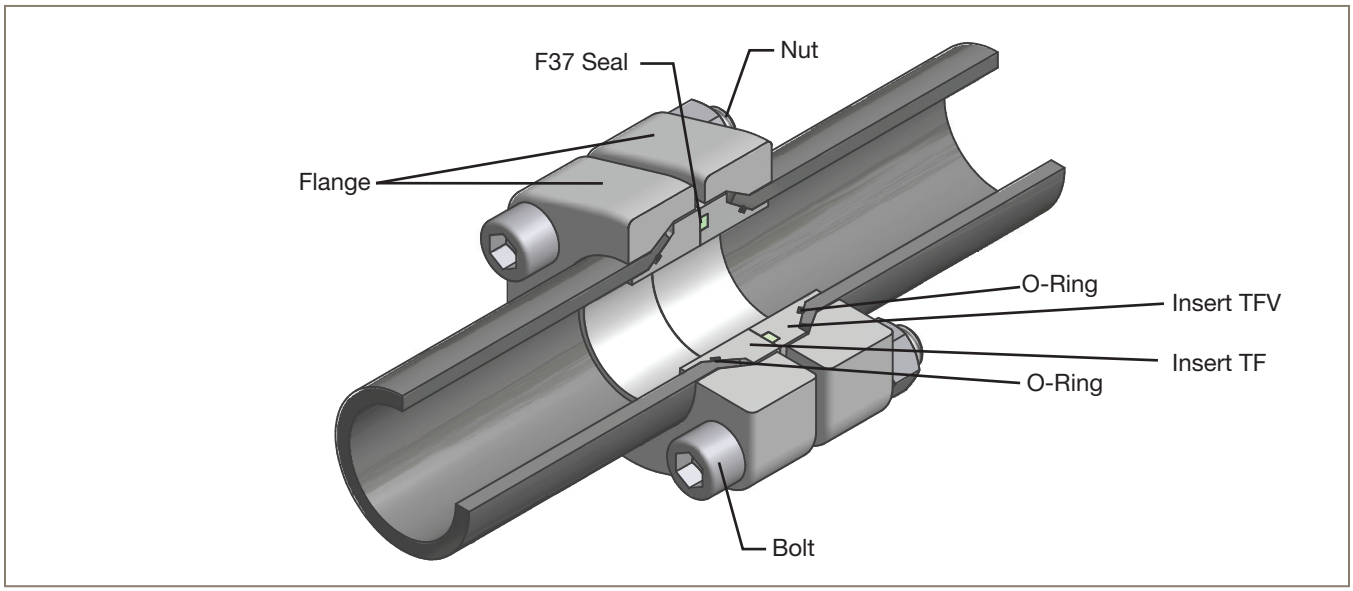




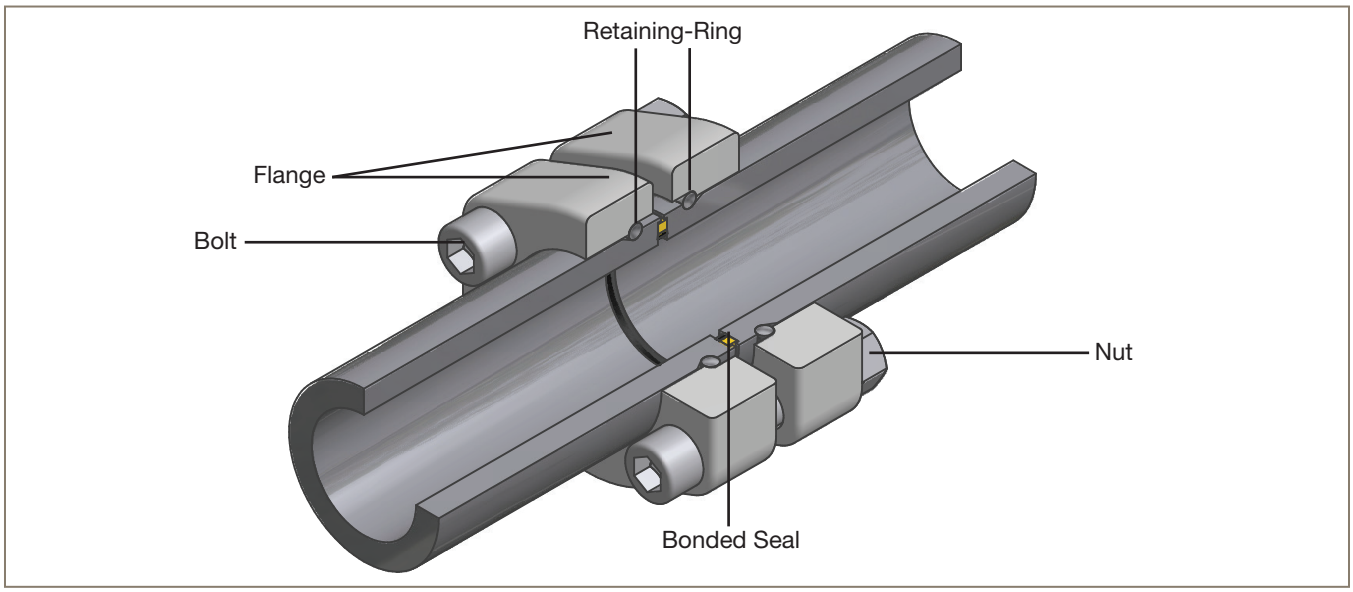


Connection technology

The Parflange® F37 Programme consists of two flange connection technologies: The 37° Flare Flange Connection and the Retaining Ring Connection.

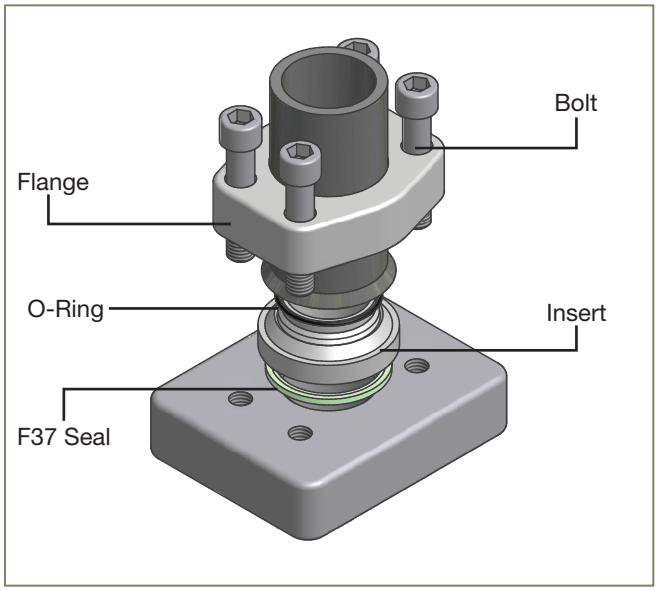


Parflange® F37 Flare Flanges – In this configuration, the deburred tube end is flared orbitally to 37° by Parflange® technology. An insert, soft sealed by an O-Ring, is located into each pipe end. In between a F37 Seal (optionally Bonded Seal or O-Ring) is placed. By tightening the flanges together, a soft sealed, high pressure tube connection is made. Available as tube-to-tube connection or tube-to-port connection.

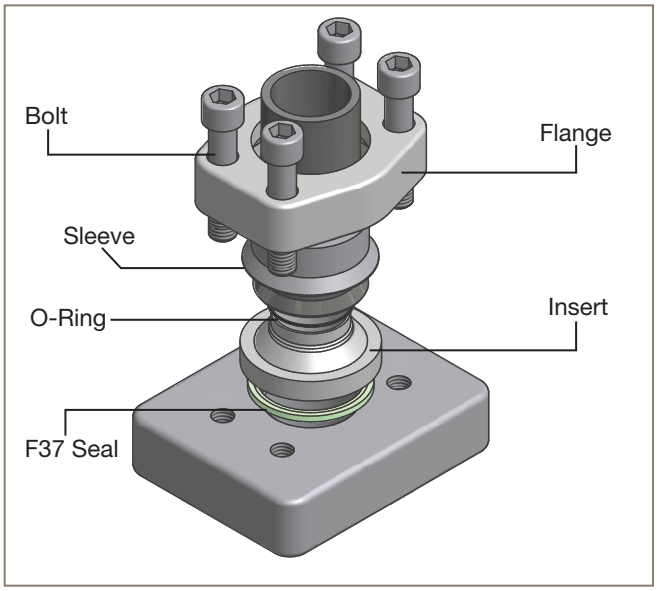


Retaining Ring Connection – The retaining ring used in this connection is a stainless steel segmented ring covered by a stainless steel spring. It is assembled in a machined groove on the tube end or adapter. When tightening this system, the flange is pushed against the retaining ring, thus giving a form tight connection. Retaining ring connections complete the Parflange® F37 range with bulkhead, male, female, weld and tube bend connections.

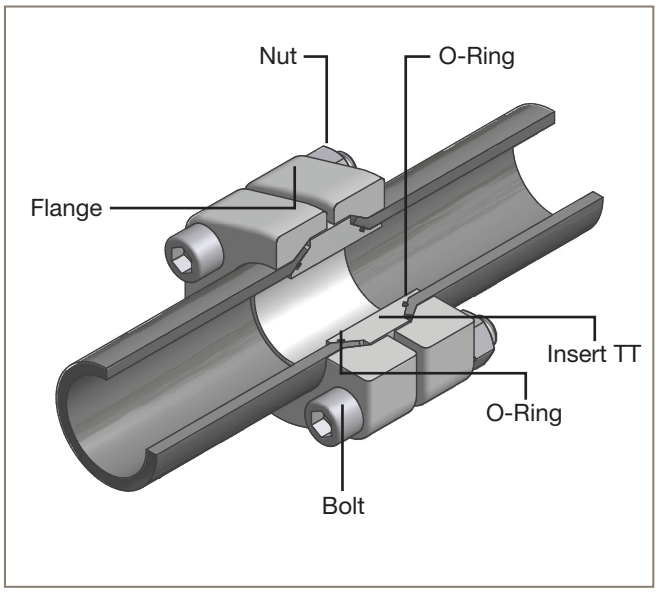
Connection methods F37 – Flared tube



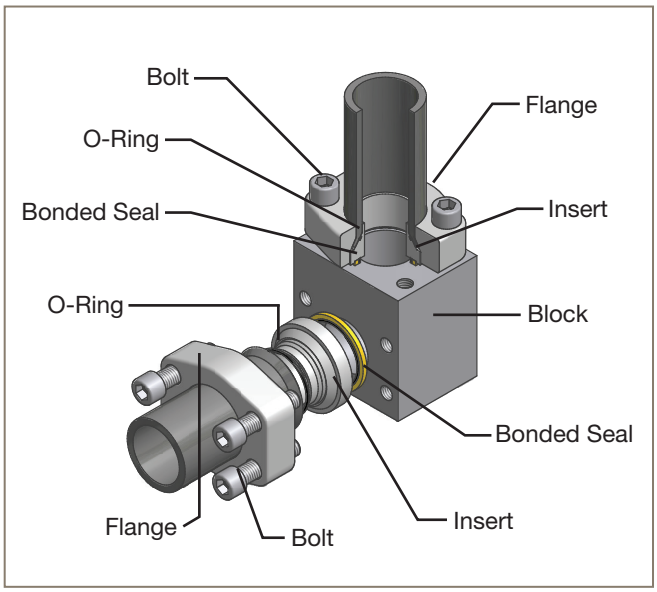
Flange to Port – the flanged tube is connected by the flange, insert and F37 seal to a port. Inserts with Bonded Seal can be used alternatively.



Flange to Port – the standard F37 Flanges can be used with adapter sleeve for smaller tube sizes as well.

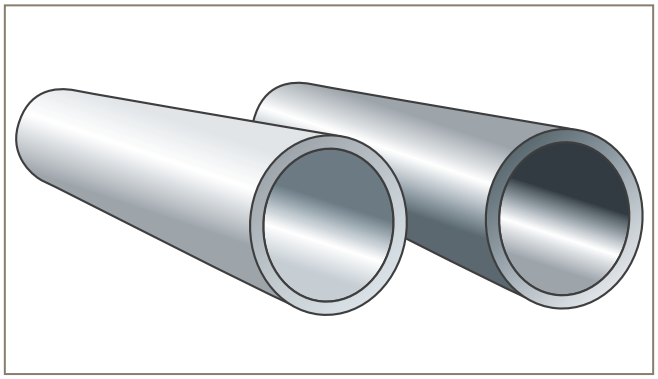


Tube to Tube – two flanges and one insert connecting two flared tubes. A two insert solution with F37 Seal or Bonded Seal is optional.



Tube to Block – instead of using flange bends compact L-Blocks are available. The range is completed by T-Blocks and Reducing Blocks. Special Manifolds according to customer design available on request.

Tube selection



- Select suitable tube material according to our tube and pipe specifications

Tube and pipe specification

Recommended carbon steel tubes and pipes

Parker recommends the use of cold drawn seamless hydraulic tubes and pipes acc. to DIN EN 10305-4.

E 355N (St. 52.4 NBK) or E 235N (St. 37.4 NBK).

+ precision dimension/shape
+ clean inside (no scale)
+ high pressure capability
+ excellent smooth surface after roll flaring

Recommended stainless steel tubes and pipes

Parker recommends the use of seamless cold drawn stainless steel tubes and pipes acc. to

ASTM A269/A213
Grade TP316L (1.4404)

+ precision dimension/shape
+ excellent smooth surface after roll flaring
+ high pressure capability

Welded tubes and pipes

Tubes and pipes acc. to above specification but welded and cold redrawn instead of seamless drawn are suitable. Pressure capability might be reduced due to the welding seam zone.

Welding seam quality might effect roll flaring surface results.

Hot rolled pipes

Hot rolled pipes are not recommended for the following reasons:

Hot rolled pipes do not have precision dimensions and may slip in machine dies.
They have scales inside and outside. The inside scales effect the cleanliness level of the fluid.
Used in roll flaring process the scales will contaminate the flaring tools (high cleaning effort) and cause poor flare surface quality.

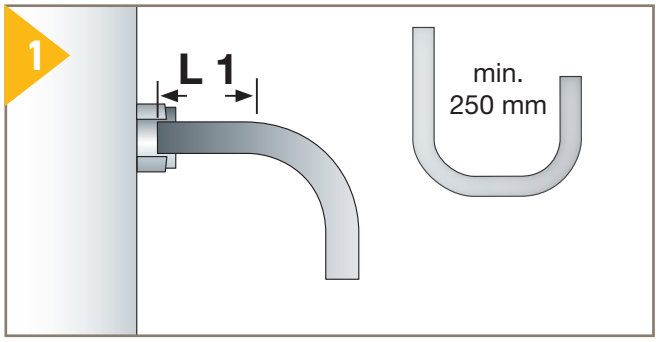
The required maximum working pressure is calculated either acc. to DNV, DIN or ANSI.

Material specifications

Material	Data Source	Yield/Tensile	Permissible stress
E235N (St37.4)	DIN EN 10305-4	min. 235/340 N/mm2	126 N/mm2 (tensile strength / 2.7)
	Tube certification	min. 235/390 N/mm2	130.5 N/mm2 (yield strength / 1.8) 5)
E355N (St52.4)	DIN EN 10305-4	min. 355/490 N/mm2	181.5 N/mm2 (tensile strength / 2.7)
	Tube certification	min. 355/533 N/mm2	197 N/mm2 (yield strength / 1.8) 5)
1.4404 (316L)	DIN EN 10216-5	min. 210/500 N/mm2	131 N/mm2 (0.2%proof stress / 1.6)
	ASTM 269 / A213 – TP 316 L and tube certification	min. 276/530 N/mm2	172.5 N/mm2 (0.2%proof stress / 1.6) 5)
1.4404 (316L)	Schedule Pipe ASTM A312 / A530 – TP 316 L and tube certification	min. 234/515 N/mm2	146 N/mm2 (0.2%proof stress / 1.6) 5)

5) Pressure rating calculation based on this mechanical properties require certification according to 3.1 - EN 10204 that confirms the mechanical properties.

Tube preparation

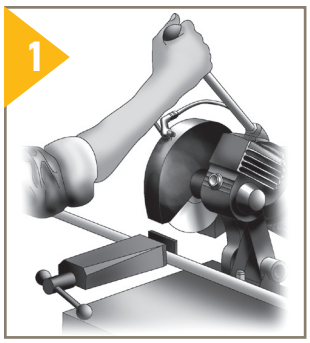


• Minimum straight length **L1** before bend

Flange inch	Parflange® F37 ISO 6162-1 (SAE 1000) footprint L_1 [mm]	Parflange® F37 ISO 6162-1 (SAE 3000) footprint L_1 [mm]	Parflange® F37 ISO 6162-2 (SAE 6000) footprint L_1 [mm]	Parflange® F37 ISO 6164 Square flange L_1 [mm]
1/2		70	70	
3/4		70	75	
1		75	75	
1 1/4		75	80	
1 1/2	75	75	85	
2	90	90	90	90
2 1/2	115	115		120
3	135	135		135
3 1/2	150			
4	175			
5	210			
6	on request			
8	on request			
10	410			

All dimensions valid with Parker Parflange® 170

• All dimensions are recommendations only and must be checked with the specific tube used in the application

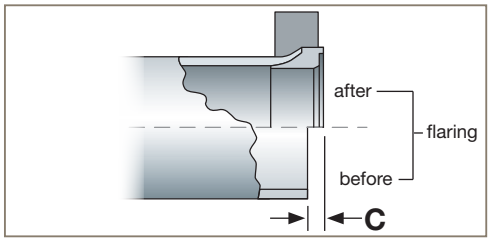


• Cut and deburr thoroughly
• Cut tube squarely – max +/- 1° deviation
• Do not use a roller cutter or a grinder

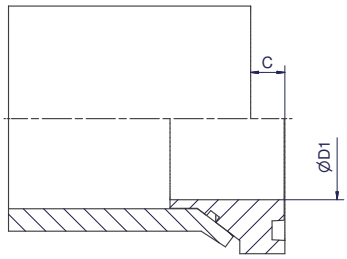
Potential mistakes:
• Tube is not cut squarely
• Use of wrong tooling

⚠ Recommended cleaning procedure:
• Place the hose, tube or pipe firmly against the nozzle to make an airtight seal.
• Depress the trigger to fire the projectile.
• Release the trigger when the projectile has exit the pipe
• Shoot through at least 2 projectiles

Chart distance C – SAE 1000/ISO 6162-1

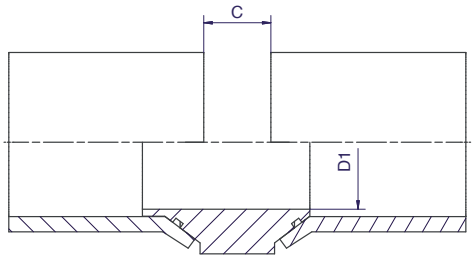


TFV / TF – Flare flange connection



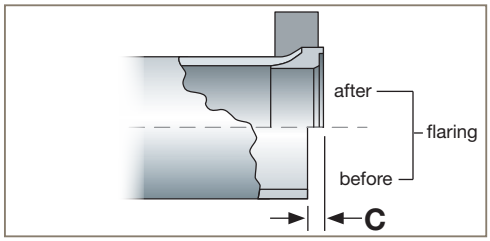
Size Inch	Tube	Flange incl. Insert F37 Seal + O-Ring Order code	D1	C
1 1/2	50X3.0	**F37-124-50X3.0TFVCF**	36.0	11
2	60X3.0	**F37-132-60X3.0TFVCF**	46.0	12
2 1/2	75X3.0	**F37-140-75X3.0TFVCF**	60.0	10
3	90X3.5	**F37-148-90X3.5TFVCF**	72.0	15
3 1/2	100x4.0	**F37-156-100X4.0TFVCF**	88.6	15
4	115X4.0	**F37-164-115X4.0TFVCF**	90.0	14
5	140X4.5	**F37-180-140X4.5TFVCF**	122.0	15
6	165X5.0	**F37-196-165X5.0TFVCF**	150.8	17
8	220X6.0	**F37-1128-220X6.0TFVCF**	203.3	16
10	273X6.0	**F37-1160-273X6.0TFVCF**	256.2	17

TT – Flare flange connection

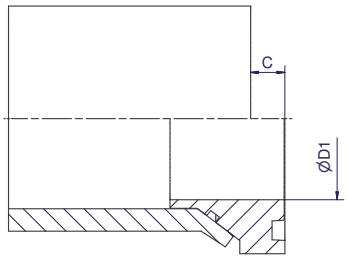


Size Inch	Tube	Flange incl. Insert + 2 x O-Ring Order code	D1	C
1 1/2	50X3.0	**F37-124-50X3.0TTCF**	36.0	22
2	60X3.0	**F37-132-60X3.0TTCF**	46.0	24
2 1/2	75X3.0	**F37-140-75X3.0TTCF**	60.0	20
3	90X3.5	**F37-148-90X3.5TTCF**	72.0	30
3 1/2	100X4.0	**F37-156-100X4.0TTCF**	88.6	30
4	115X4.0	**F37-164-115X4.0TTCF**	90.0	28
5	140X4.5	**F37-180-140X4.5TTCF**	122.0	30
6	165X5.0	**F37-196-165X5.0TTCF**	150.8	34
8	220X6.0	**F37-1128-220X6.0TTCF**	on request	
10	273X6.0	**F37-1160-273X6.0TTCF**	on request	

Chart distance C – SAE 3000/ISO 6162-1

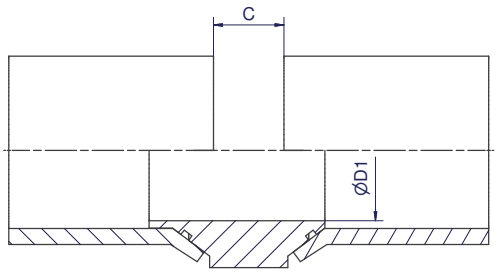


TFV / TF – Flare flange connection



Size		Flange incl. Insert + F37 Seal + O-Ring (Sleeve)		
Inch	Tube	Order code	D1	C
1/2	16X2.0	**F37-308-16X2.0TFVCF**	9.5	8.0
1/2	18X2.0	**F37-308-18X2.0TFVCF**	11.5	8.0
1/2	20X2.0	**F37-308-20X2.0TFVCF**	13.5	8.0
1/2	20X2.5	**F37-308-20X2.5TFVCF**	13.5	8.0
1/2	25X2.5	**F37-308-25X2.5TFVCF**	13.5	10.0
1/2	25X3.0	**F37-308-25X3.0TFVCF**	13.0	8.0
3/4	20X2.0	**F37-312-20X2.0TFVCF**	13.5	8.0
3/4	20X2.5	**F37-312-20X2.5TFVCF**	12.5	8.0
3/4	25X2.5	**F37-312-25X2.5TFVCF**	17.5	10.0
3/4	25X3.0	**F37-312-25X3.0TFVCF**	16.5	8.0
3/4	30X3.0	**F37-312-30X3.0TFVCF**	19.0	8.5
3/4	30X4.0	**F37-312-30X4.0TFVCF**	19.0	8.5
1	25X2.5	**F37-316-25X2.5TFVCF**	17.5	10.0
1	25X3.0	**F37-316-25X3.0TFVCF**	16.5	8.0
1	30X3.0	**F37-316-30X3.0TFVCF**	21.5	8.5
1	30X4.0	**F37-316-30X4.0TFVCF**	19.5	8.5
1	38X2.5	**F37-316-38X2.5TFVCF**	25.0	9.5
1	38X3.0	**F37-316-38X3.0TFVCF**	25.0	9.0
1	38X4.0	**F37-316-38X4.0TFVCF**	25.0	10.0
1	38X5.0	**F37-316-38X5.0TFVCF**	25.0	8.0
1 1/4	30X3.0	**F37-320-30X3.0TFVCF**	21.5	8.5
1 1/4	30X4.0	**F37-320-30X4.0TFVCF**	19.5	8.5
1 1/4	38X3.0	**F37-320-38X3.0TFVCF**	29.5	9.0
1 1/4	38X4.0	**F37-320-38X4.0TFVCF**	27.0	10.0
1 1/4	38X5.0	**F37-320-38X5.0TFVCF**	25.5	8.0
1 1/4	42X3.0	**F37-320-42X3.0TFVCF**	31.5	10.0
1 1/4	42X4.0	**F37-320-42X4.0TFVCF**	31.5	10.0
1 1/2	38X3.0	**F37-324-38X3.0TFVCF**	27.5	9.0
1 1/2	38X4.0	**F37-324-38X4.0TFVCF**	27.5	10.0
1 1/2	38X5.0	**F37-324-38X5.0TFVCF**	25.0	8.0
1 1/2	42X3.0	**F37-324-42X3.0TFVCF**	33.5	10.0
1 1/2	42X4.0	**F37-324-42X4.0TFVCF**	31.5	10.0
1 1/2	50X3.0	**F37-324-50X3.0TFVCF**	36.0	11.0
1 1/2	50X5.0	**F37-324-50X5.0TFVCF**	36.0	10.0
1 1/2	50X6.0	**F37-324-50X6.0TFVCF**	35.0	10.0

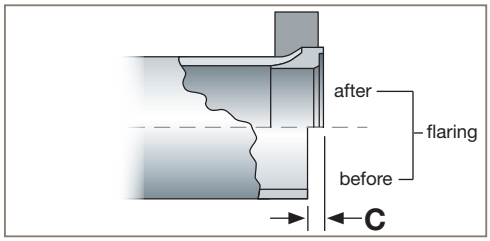
TT – Flare flange connection



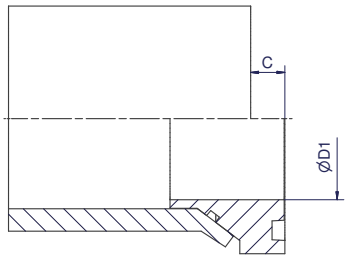
Size		2 Flanges incl. Insert + 2 x O-Ring (+ 2 x Sleeve)		
Inch	Tube	Order code	D1	C
1/2	16X2.0	**F37-308-16X2.0TTCF**	9.5	16
1/2	18X2.0	**F37-308-18X2.0TTCF**	11.5	16
1/2	20X2.0	**F37-308-20X2.0TTCF**	13.5	16
1/2	20X2.5	**F37-308-20X2.5TTCF**	13.5	16
1/2	25X2.5	**F37-308-25X2.5TTCF**	13.5	20
1/2	25X3.0	**F37-308-25X3.0TTCF**	13.0	16
3/4	20X2.0	**F37-312-20X2.0TTCF**	13.5	16
3/4	20X2.5	**F37-312-20X2.5TTCF**	12.5	16
3/4	25X2.5	**F37-312-25X2.5TTCF**	17.5	20
3/4	25X3.0	**F37-312-25X3.0TTCF**	16.5	16
3/4	30X3.0	**F37-312-30X3.0TTCF**	19.0	17
3/4	30X4.0	**F37-312-30X4.0TTCF**	19.0	17
1	25X2.5	**F37-316-25X2.5TTCF**	17.5	20
1	25X3.0	**F37-316-25X3.0TTCF**	16.5	16
1	30X3.0	**F37-316-30X3.0TTCF**	21.5	17
1	30X4.0	**F37-316-30X4.0TTCF**	19.5	17
1	38X2.5	**F37-316-38X2.5TTCF**	25.0	19
1	38X3.0	**F37-316-38X3.0TTCF**	25.0	18
1	38X4.0	**F37-316-38X4.0TTCF**	25.0	20
1	38X5.0	**F37-316-38X5.0TTCF**	25.0	16
1 1/4	30X3.0	**F37-320-30X3.0TTCF**	21.5	17
1 1/4	30X4.0	**F37-320-30X4.0TTCF**	19.5	17
1 1/4	38X3.0	**F37-320-38X3.0TTCF**	29.0	18
1 1/4	38X4.0	**F37-320-38X4.0TTCF**	27.0	20
1 1/4	38X5.0	**F37-320-38X5.0TTCF**	25.5	16
1 1/4	42X3.0	**F37-320-42X3.0TTCF**	31.5	20
1 1/4	42X4.0	**F37-320-42X4.0TTCF**	31.5	20
1 1/2	38X3.0	**F37-324-38X3.0TTCF**	27.5	18
1 1/2	38X4.0	**F37-324-38X4.0TTCF**	27.5	20
1 1/2	38X5.0	**F37-324-38X5.0TTCF**	25.0	16
1 1/2	42X3.0	**F37-324-42X3.0TTCF**	33.5	20
1 1/2	42X4.0	**F37-324-42X4.0TTCF**	31.5	20
1 1/2	50X3.0	**F37-324-50X3.0TTCF**	36.0	22
1 1/2	50X5.0	**F37-324-50X5.0TTCF**	36.0	20
1 1/2	50X6.0	**F37-324-50X6.0TTCF**	35.0	20

see next page

Chart distance C – SAE 3000/ISO 6162-1 continued

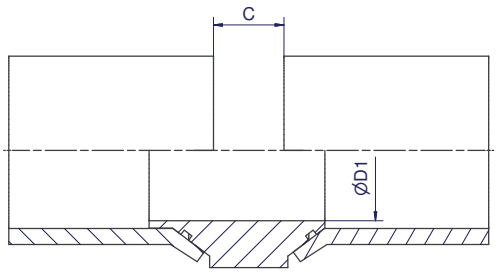


TFV / TF – Flare flange connection



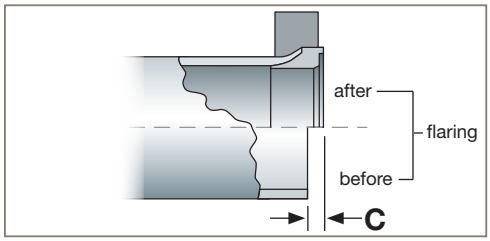
Size		Flange incl. Insert + F37 Seal + O-Ring (Sleeve)		
Inch	Tube	Order code	D1	C
2	50X3.0	**F37-332-50X3.0TFVCF**	41.5	11.0
2	50X5.0	**F37-332-50X5.0TFVCF**	37.5	10.0
2	50X6.0	**F37-332-50X6.0TFVCF**	35.0	10.0
2	60X3.0	**F37-332-60X3.0TFVCF**	46.0	12.0
2	60X5.0	**F37-332-60X5.0TFVCF**	46.0	11.0
2	60X6.0	**F37-332-60X6.0TFVCF**	45.5	11.0
2 1/2	60X3.0	**F37-340-60X3.0TFVCF**	50.0	12.0
2 1/2	60X5.0	**F37-340-60X5.0TFVCF**	46.0	11.0
2 1/2	60X6.0	**F37-340-60X6.0TFVCF**	45.5	11.0
2 1/2	75X3.0	**F37-340-75X3.0TFVCF**	60.0	10.0
2 1/2	75X5.0	**F37-340-75X5.0TFVCF**	60.0	10.0
3	75X3.0	**F37-348-75X3.0TFVCF**	66.0	10.0
3	75X5.0	**F37-348-75X5.0TFVCF**	62.0	10.0
3	90X3.5	**F37-348-90X3.5TFVCF**	72.0	15.0
3	90X5.0	**F37-348-90X5.0TFVCF**	72.0	14.0

TT – Flare flange connection

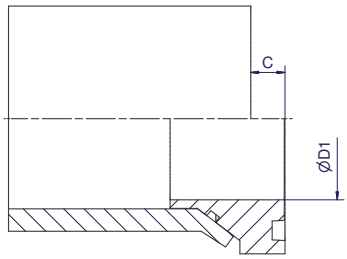


Size		2 Flanges incl. Insert + 2 x O-Ring (+ 2 x Sleeve)		
Inch	Tube	Order code	D1	C
2	50X3.0	**F37-332-50X3.0TTCF**	41.5	22
2	50X5.0	**F37-332-50X5.0TTCF**	37.5	20
2	50X6.0	**F37-332-50X6.0TTCF**	35.0	20
2	60X3.0	**F37-332-60X3.0TTCF**	46.0	24
2	60X5.0	**F37-332-60X5.0TTCF**	46.0	22
2	60X6.0	**F37-332-60X6.0TTCF**	45.5	22
2 1/2	60X3.0	**F37-340-60X3.0TTCF**	50.0	24
2 1/2	60X5.0	**F37-340-60X5.0TTCF**	46.0	22
2 1/2	60X6.0	**F37-340-60X6.0TTCF**	45.0	22
2 1/2	75X3.0	**F37-340-75X3.0TTCF**	60.0	20
2 1/2	75X5.0	**F37-340-75X5.0TTCF**	60.0	20
3	75X3.0	**F37-348-75X3.0TTCF**	66.0	20
3	75X5.0	**F37-348-75X5.0TTCF**	62.0	20
3	90X3.5	**F37-348-90X3.5TTCF**	72.0	30
3	90X5.0	**F37-348-90X5.0TTCF**	72.0	28

Chart distance C – SAE 6000/ISO 6162-2

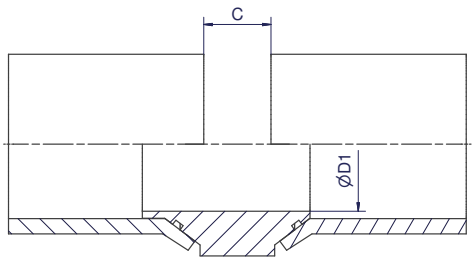


TFV / TF – Flare flange connection



Size		Flange incl. Insert + F37 Seal + O-Ring (+ Sleeve) Order code	D1	C
Inch	Tube			
1/2	16X2.0	**F37-608-16X2.0TFVCF**	9.5	8.0
1/2	18X2.0	**F37-608-18X2.0TFVCF**	11.5	8.0
1/2	20X2.0	**F37-608-20X2.0TFVCF**	13.5	8.0
1/2	20X2.5	**F37-608-20X2.5TFVCF**	13.5	8.0
1/2	25X2.5	**F37-608-25X2.5TFVCF**	13.5	10.0
1/2	25X3.0	**F37-608-25X3.0TFVCF**	13.0	8.0
3/4	20X2.0	**F37-612-20X2.0TFVCF**	13.5	8.0
3/4	20X2.5	**F37-612-20X2.5TFVCF**	12.5	8.0
3/4	25X2.5	**F37-612-25X2.5TFVCF**	17.5	10.0
3/4	25X3.0	**F37-612-25X3.0TFVCF**	16.5	8.0
3/4	30X3.0	**F37-612-30X3.0TFVCF**	19.0	8.5
3/4	30X4.0	**F37-612-30X4.0TFVCF**	19.5	8.5
1	25X2.5	**F37-616-25X2.5TFVCF**	17.5	10.0
1	25X3.0	**F37-616-25X3.0TFVCF**	16.5	8.0
1	30X3.0	**F37-616-30X3.0TFVCF**	21.5	8.5
1	30X4.0	**F37-616-30X4.0TFVCF**	19.5	8.5
1	38X2.5	**F37-616-38X2.5TFVCF**	25.0	9.5
1	38X3.0	**F37-616-38X3.0TFVCF**	25.0	9.0
1	38X4.0	**F37-616-38X4.0TFVCF**	25.0	10.0
1	38X5.0	**F37-616-38X5.0TFVCF**	25.0	8.0
1 1/4	30X3.0	**F37-620-30X3.0TFVCF**	21.5	8.5
1 1/4	30X4.0	**F37-620-30X4.0TFVCF**	19.5	8.5
1 1/4	38X3.0	**F37-620-38X3.0TFVCF**	29.5	9.0
1 1/4	38X4.0	**F37-620-38X4.0TFVCF**	27.0	10.0
1 1/4	38X5.0	**F37-620-38X5.0TFVCF**	25.5	8.0
1 1/4	42X3.0	**F37-620-42X3.0TFVCF**	31.5	10.0
1 1/4	42X4.0	**F37-620-42X4.0TFVCF**	31.5	10.0
1 1/2	38X3.0	**F37-624-38X3.0TFVCF**	27.5	9.0
1 1/2	38X4.0	**F37-624-38X4.0TFVCF**	27.5	10.0
1 1/2	38X5.0	**F37-624-38X5.0TFVCF**	25.0	8.0
1 1/2	42X3.0	**F37-624-42X3.0TFVCF**	33.5	10.0
1 1/2	42X4.0	**F37-624-42X4.0TFVCF**	31.5	10.0
1 1/2	50X3.0	**F37-624-50X3.0TFVCF**	36.0	11.0
1 1/2	50X5.0	**F37-624-50X5.0TFVCF**	36.0	10.0
1 1/2	50X6.0	**F37-624-50X6.0TFVCF**	35.0	10.0

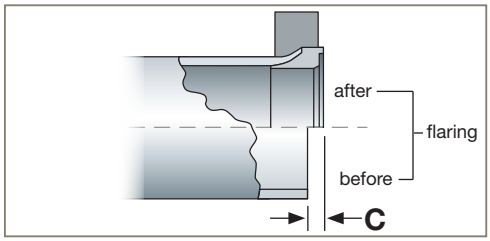
TT – Flare flange connection



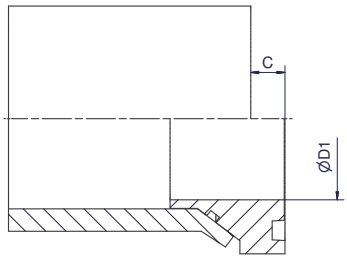
Size		2 x Flanges incl. Insert + 2 x O-Ring (+ 2 x Sleeve) Order code	D1	C
Inch	Tube			
1/2	16X2.0	**F37-608-16X2.0TTCF**	9.5	16
1/2	18X2.0	**F37-608-18X2.0TTCF**	11.5	16
1/2	20X2.0	**F37-608-20X2.0TTCF**	13.5	16
1/2	20X2.5	**F37-608-20X2.5TTCF**	13.5	16
1/2	25X2.5	**F37-608-25X2.5TTCF**	13.5	20
1/2	25X3.0	**F37-608-25X3.0TTCF**	13.5	16
3/4	20X2.0	**F37-612-20X2.0TTCF**	13.5	16
3/4	20X2.5	**F37-612-20X2.5TTCF**	12.5	16
3/4	25X2.5	**F37-612-25X2.5TTCF**	17.5	20
3/4	25X3.0	**F37-612-25X3.0TTCF**	16.5	16
3/4	30X3.0	**F37-612-30X3.0TTCF**	19.0	17
3/4	30X4.0	**F37-612-30X4.0TTCF**	19.5	17
1	25X2.5	**F37-616-25X2.5TTCF**	17.5	20
1	25X3.0	**F37-616-25X3.0TTCF**	16.5	16
1	30X3.0	**F37-616-30X3.0TTCF**	21.5	17
1	30X4.0	**F37-616-30X4.0TTCF**	19.5	17
1	38X2.5	**F37-616-38X2.5TTCF**	25.0	19
1	38X3.0	**F37-616-38X3.0TTCF**	25.0	18
1	38X4.0	**F37-616-38X4.0TTCF**	25.0	20
1	38X5.0	**F37-616-38X5.0TTCF**	25.0	16
1 1/4	30X3.0	**F37-620-30X3.0TTCF**	21.5	17
1 1/4	30X4.0	**F37-620-30X4.0TTCF**	19.5	17
1 1/4	38X3.0	**F37-620-38X3.0TTCF**	25.0	18
1 1/4	38X4.0	**F37-620-38X4.0TTCF**	27.0	20
1 1/4	38X5.0	**F37-620-38X5.0TTCF**	25.5	16
1 1/4	42X3.0	**F37-620-42X3.0TTCF**	31.5	20
1 1/4	42X4.0	**F37-620-42X4.0TTCF**	31.5	20
1 1/2	38X3.0	**F37-624-38X3.0TTCF**	27.5	18
1 1/2	38X4.0	**F37-624-38X4.0TTCF**	27.5	20
1 1/2	38X5.0	**F37-624-38X5.0TTCF**	25.0	16
1 1/2	42X3.0	**F37-624-42X3.0TTCF**	33.5	20
1 1/2	42X4.0	**F37-624-42X4.0TTCF**	31.5	20
1 1/2	50X3.0	**F37-624-50X3.0TTCF**	36.0	22
1 1/2	50X5.0	**F37-624-50X5.0TTCF**	36.0	20
1 1/2	50X6.0	**F37-624-50X6.0TTCF**	35.0	20

see next page

Chart distance C – SAE 6000/ISO 6162-2 continued

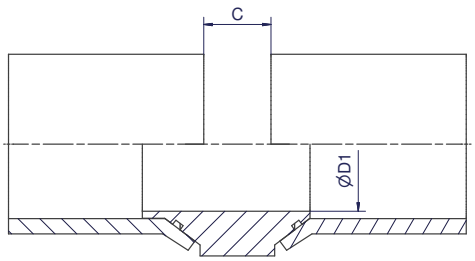


TFV / TF – Flare flange connection



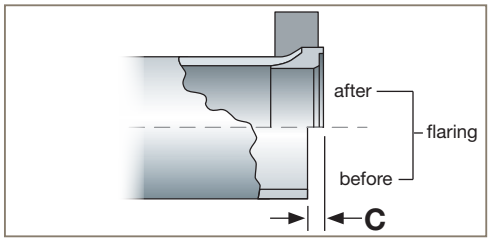
Size		Flange incl. Insert + F37 Seal + O-Ring (+ Sleeve) Order code	D1	C
Inch	Tube			
2	50X3.0	**F37-632-50X3.0TFVCF**	41.5	11.0
2	50X5.0	**F37-632-50X5.0TFVCF**	37.5	10.0
2	50X6.0	**F37-632-50X6.0TFVCF**	35.0	10.0
2	60X3.0	**F37-632-60X3.0TFVCF**	46.0	12.0
2	60X5.0	**F37-632-60X5.0TFVCF**	46.0	11.0
2	60X6.0	**F37-632-60X6.0TFVCF**	45.5	11.0
2 1/2	73X7.0	**F37-640-73X7.0TFVCF**	56.0	13.0

TT – Flare flange connection

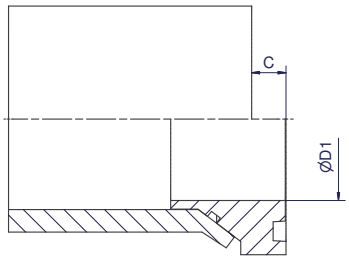


Size		2 x Flanges incl. Insert + 2 x O-Ring (+ 2 x Sleeve) Order code	D1	C
Inch	Tube			
2	50X3.0	**F37-632-50X3.0TTCF**	41.5	22
2	50X5.0	**F37-632-50X5.0TTCF**	37.5	20
2	50X6.0	**F37-632-50X6.0TTCF**	35.0	20
2	60X3.0	**F37-632-60X3.0TTCF**	46.0	24
2	60X5.0	**F37-632-60X5.0TTCF**	46.0	22
2	60X6.0	**F37-632-60X6.0TTCF**	45.5	22
2 1/2	73X7.0	**F37-640-73X7.0TTCF**	56.0	26

Chart distance C – Parflange® F37 – ISO 6164

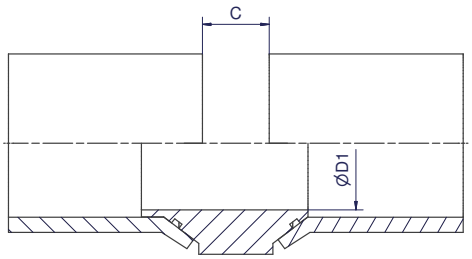


TFV / TF – Flare flange connection



Size		Flange incl. Insert + F37 Seal + O-Ring (+ Sleeve)		
Inch	Tube	Order code	D1	C
2	50X3.0	**F37-432-50X3.0TFVCF**	42	11
2	50X5.0	**F37-432-50X5.0TFVCF**	38	10
2	50X6.0	**F37-432-50X6.0TFVCF**	35	10
2	60X3.0	**F37-432-60X3.0TFVCF**	46	12
2	60X5.0	**F37-432-60X5.0TFVCF**	46	11
2	60X6.0	**F37-432-60X6.0TFVCF**	46	11
2 1/2	60X3.0	**F37-440-60X3.0TFVCF**	50	12
2 1/2	60X5.0	**F37-440-60X5.0TFVCF**	46	11
2 1/2	60X6.0	**F37-440-60X6.0TFVCF**	46	11
2 1/2	73X7.0	**F37-440-73X7.0TFVCF**	56	13
2 1/2	75X3.0	**F37-440-75X3.0TFVCF**	60	10
2 1/2	75X5.0	**F37-440-75X5.0TFVCF**	60	10
3	75X3.0	**F37-448-75X3.0TFVCF**	66	10
3	75X5.0	**F37-448-75X5.0TFVCF**	62	10
3	90X3.5	**F37-448-90X3.5TFVCF**	72	15
3	90X5.0	**F37-448-90X5.0TFVCF**	72	14
3	90X9.0	**F37-448-90X9.0TFVCF**	69	17

TT – Flare flange connection



Size		2 Flange incl. Insert + 2 x O-Ring (2 x Sleeve)		
Inch	Tube	Order code	D1	C
2	50X3.0	**F37-432-50X3.0TTCF**	42	22
2	50X5.0	**F37-432-50X5.0TTCF**	38	20
2	50X6.0	**F37-432-50X6.0TTCF**	35	20
2	60X3.0	**F37-432-60X3.0TTCF**	46	24
2	60X5.0	**F37-432-60X5.0TTCF**	46	22
2	60X6.0	**F37-432-60X6.0TTCF**	46	22
2 1/2	60X3.0	**F37-440-60X3.0TTCF**	50	24
2 1/2	60X5.0	**F37-440-60X5.0TTCF**	46	22
2 1/2	60X6.0	**F37-440-60X6.0TTCF**	45	22
2 1/2	73X7.0	**F37-440-73X7.0TTCF**	56	26
2 1/2	75X3.0	**F37-440-75X3.0TTCF**	60	20
2 1/2	75X5.0	**F37-440-75X5.0TTCF**	60	20
3	75X3.0	**F37-448-75X3.0TTCF**	66	20
3	75X5.0	**F37-448-75X5.0TTCF**	62	20
3	90X3.5	**F37-448-90X3.5TTCF**	72	30
3	90X5.0	**F37-448-90X5.0TTCF**	72	28
3	90X9.0	**F37-448-90X9.0TTCF**	69	34

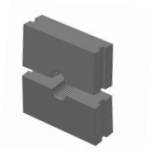
Checking instructions for Parflange® tools

- Use of damaged, worn or non-suitable tooling may result in flange failure and damage of machine
- Tools must be checked regularly, at least after 50 assemblies
- Worn tools must be replaced
- Use only genuine Parker Parts
- Tools must always be kept clean and lubricated

- Clean pin for checking
- Visual check:
  Surface must be free of wear and damage

- Clean die halves for checking
- Visual check:
  Grip surface must be clean and free of wear
- Use wire-brush to remove metal particles from grip surface

Checking instructions for Parflange® tools

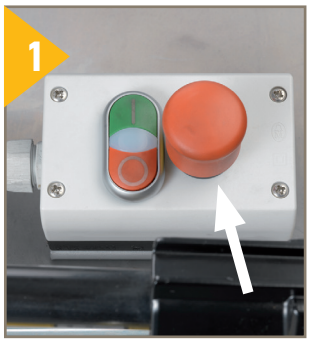
	Clamping die frame small/large 	Clamping die set “MF“ 	Extended clamping die set “MF“ for large tube wall thickness 	Flanging pin “BF“ 
Tube O.D. mm	Order code Clamping die frame	Order code Clamping die set	Order code Extended clamping die set	Order code Flanging pin
16	MF37/FRAME20-60	MF37-16		BF37-6/42
20		MF37-20		BF37-6/42
25		MF37-25		BF37-6/42
30		MF37-30		BF37-6/42
32.9		MF37-32.9		BF37-6/42
33.4		MF37-33.4		BF37-6/42
38		MF37-38		BF37-38/60
42		MF37-42		BF37-38/60
48.3		MF37-48.3		BF37-38/60
50		MF37-50		BF37-38/60
60		MF37-60		BF37-60/75
60.3		MF37-60.3		BF37-60/75
65	MF37/FRAME73-90	MF37-65 E		BF37-60/75 for 65.0X8.0** additional BF37-65-Preflare
73		MF37-73	MF37-73E for Tube 73X7	BF37-60/75
75		MF37-75		BF37-75/90
88.9		MF37-88.9		BF37-75/90
90		MF37-90	MF37-90E for Tube 90X9**	BF37-75/90 for 90X9.0** additional BF37-90-Preflare
114.3	no frame required	MF37-114.3	MF37-114.3E for Tube 114.3X6.02 and 114.3X6.55	BF37-115/140
115		MF37-115		BF37-115/140
125		MF37-125		BF37-115/140
139.7		MF37-139.7		BF37-115/140
140		MF37-140		BF37-115/140
141.3		MF37-141.3		BF37-141/165
165		MF37-165		BF37-141/165
168.3		MF37-168.3		BF37-141/165
220.0		MF37-220		BF37-220
273.0		MF37-273		BF37-273

*tools for other pipes on request

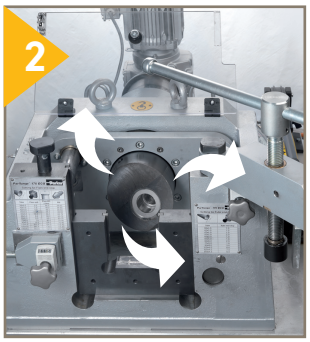
**for first flaring step preflare tools NECESSARY

Tube flaring with Parflange® 170

- Reliable forming method

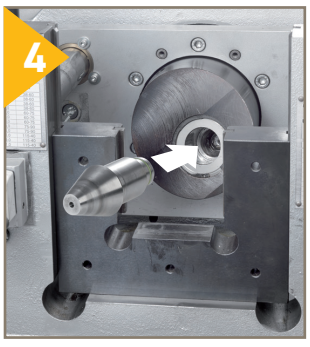


- Drive must be switched off for machine setup
- Follow all safety instructions



- Safety cover must be open
- Main spindle in rear position
- Open clamping bar

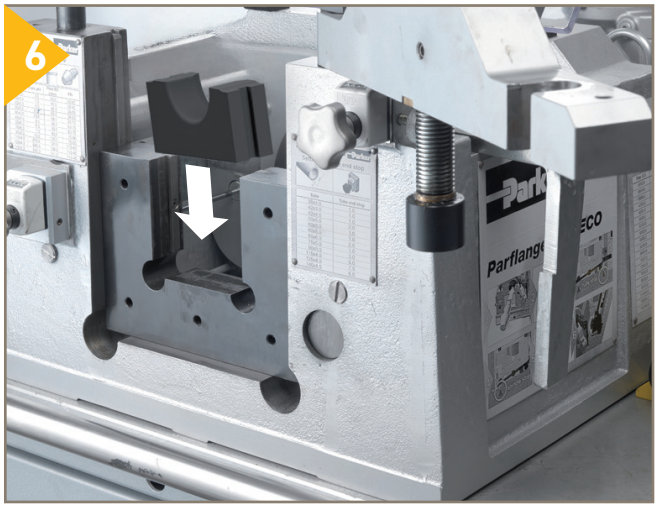
- Select suitable flanging pin according to tube dimension
- Check flanging pin for dirt, wear and damage



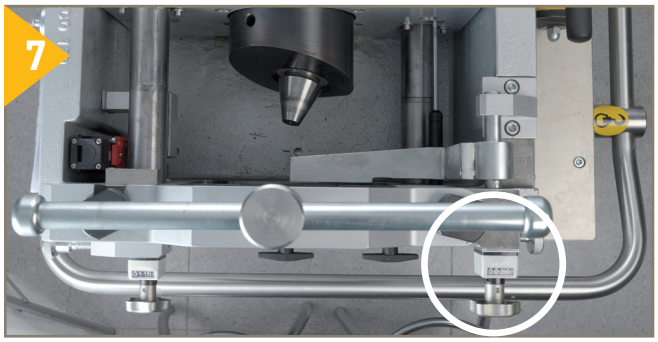
- Insert flanging pin into main spindle
- Make sure pin is all the way in

Tube flaring with Parflange® 170

- Select suitable clamping die set according to tube dimension
- Grip surface must be clean and free of wear

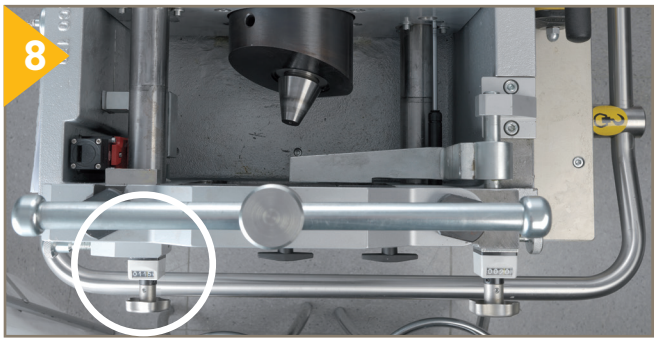


- Install matching clamping die frame
- Insert clamping die set with 37° side pointing towards main spindle
- Close clamping bar but do not tighten yet



Tube stop

- Swing in tube stop bar
- Adjust tube stop wheel according to appendix page 40
- Tighten locking screw for tube stop adjustment

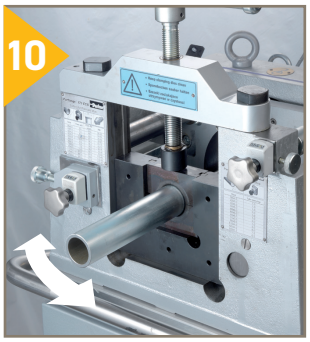


Spindle stop

- Adjust spindle stop wheel according to appendix page 40
- Tighten locking nut for spindle stop adjustment

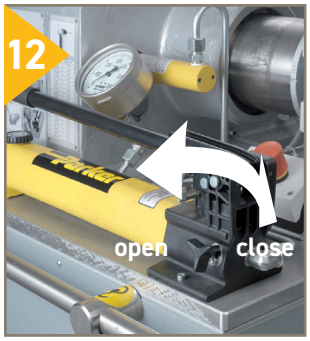
Tube flaring with Parflange® 170

- Slide flange onto tube end
- Clean and lubricate inside of tube
- Insert tube end in clamping dies
  - Support long and heavy tubes
- Lift upper clamping die to ease insertion
- Make sure tube end touches tube stop



- Tighten tube in clamping dies
- Use tube supports for long and heavy tubes
- Align tube to the machine axis and horizontally

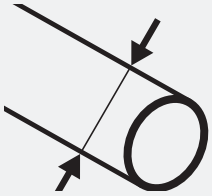
- Swing out tube stop bar
- Lubricate flanging pin
- Use Parker LUBSS lubricant
- ⚠ Other lubricants can cause rapid tool wear and result in surface welding
- ⚠ Worn or dirty tools can cause flaring failures
- Close safety cover

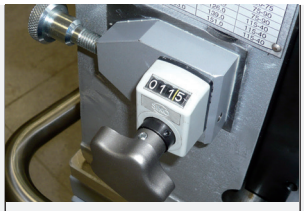


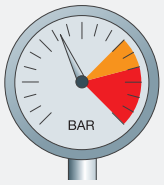
- Switch on main spindle rotation
- Close valve on handpump
- Check chart for recommended flanging pressure
- Operate handpump to move spindle towards tube end
- Continue slowly pumping until spindle stop and flanging pressure is achieved
- Open valve to retract the spindle

- Spindle will return to rear position
- Press “OFF“ button to stop spindle rotation
- Safety cover is released for opening
- Open clamping dies to release tube
- Use blows with plastic hammer to free tube if necessary

Tube and spindle stop





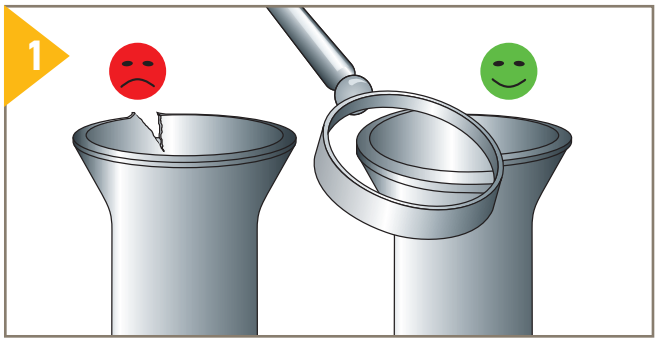


Tube [mm]	**Spindle stop** [mm]	**Flanging pressure** [bar]	**Tube stop** [mm]
16X2.0	4.5	100	0.5
18X2.0	6.0		0.5
20X2.0	7.5		0.5
20X2.5	6.5		0.5
25X2.5	9.0		1.0
25X3.0	8.0		1.5
30X3.0	14.0	150	1.5
30X4.0	12.5		2.0
33.4X4.6	16.0		2.0
38X2.5	5.5	100	0.5
38X3.0	5.5	150	1.0
38X4.0	3.5		1.0
38X5.0	2.5		1.0
42X3.0	7.0		1.0
42X4.0	5.0		1.0
48.3X3.7	12.5		1.5
50x3.0	14.5		1.0
50X5.0	11.0	200	2.0
50X6.0	10.0	250	2.5
60X3.0	10.5	150	1.0
60X5.0	8.5	200	1.0
60X6.0	6.5	250	2.0
60.3X3.9	9.5		1.5
65X8.0*	6.0 / 10.5	300	3.0
73x7.0	16.5	250	1.5
75X3.0	9.0	150	0.0
75X5.0	7.0	200	1.0
88.9X3.05	18.0	150	2.5
90X3.5	16.5	150	3.0
90X5.0	15.5	200	3.0
90X9.0*	3.0 / 12.0	350	5.0
100X4.0	994.0	220	13.0
115X4.0	975.0	200	8.0
125X4.0	985.0	250	7.5
140X4.5	993.0		6.0
141.3X6.55	992.0		5.5
165X5	990.5		10.0

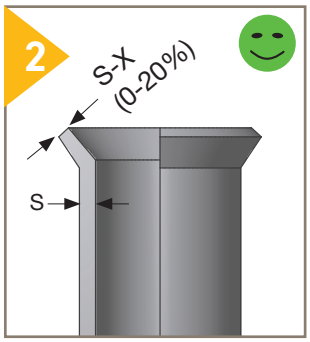
- Setting values are recommendations only
- Adjust setting to specific tube quality and tolerance

* Special forming method for tube 65x8 and 90x9 on request

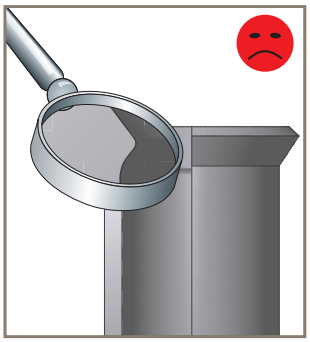
Checking of flare



- Clean flare for inspection
- ⚠ Check sealing surface for cracks, burrs, scratches and pitting
- Flare must be at right angle and concentric with tube

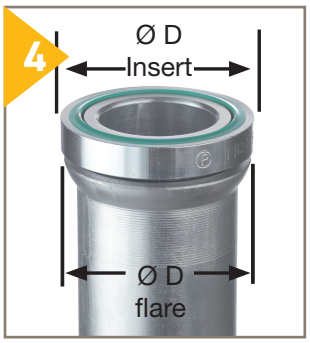


- Flaring will cause a reduction of wallthickness in the flare section (x)



- A lip inside the flare indicates overflare
- The lip can cause problems by assembling the insert

- Dimensional check of the flare outside diameter see next page

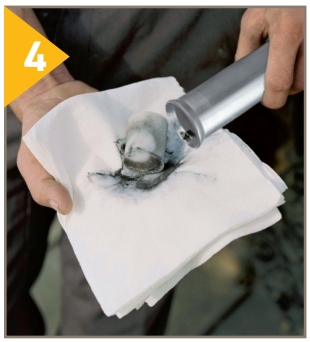


- Flare diameter should not exceed outside diameter of the insert

Checking of flare

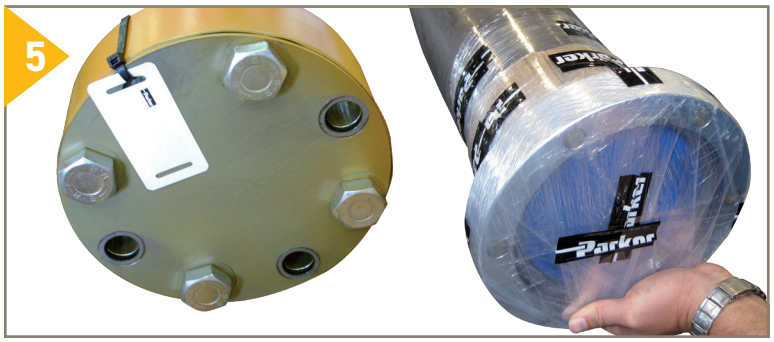
Tube O.D. [mm]	**Ø D ± 1mm** [mm]
16X2.0	20.0
18X2.0	22.5
20X2.0	24.5
20X2.5	24.5
25X2.5	29.0
25X3.0	29.0
30X3.0	36.5
30X4.0	36.5
33.4X4.6	38.0
38X2.5	44.0
38X3.0	44.0
38X4.0	44.0
38X5.0	44.0
42X3.0	48.0
42X4.0	48.0
48.3X3.7	56.0
50x3.0	58.0
50X5.0	58.0
50X6.0	58.0
60X3.0	68.0
60X5.0	68.0
60X6.0	68.0
60.3X3.9	68.5
65X8.0	76.0
73x7.0	82.8
75X3.0	82.8
75X5.0	82.8
88.9X3.05	100.3
90X3.5	100.3
90X5.0	100.3
90X9.0	100.3
100X4.0	on request
115X4.0	126.0
125X4.0	139.0
140X4.5	151.0
141.3X6.55	151.0
165X5	177.5

Tube cleaning and transportation preparation



⚠ Recommended final cleaning procedure:
- Place the hose, tube or pipe firmly against the nozzle to make an airtight seal.
- Depress the trigger to fire the projectile.
- Release the trigger when the projectile has exit the pipe
- Shoot through at least 2 projectiles

Above 60 mm
- High pressure hot water cleaning or oil flushing
- Preserve the contact surfaces and the tube inside with e.g. oil
- See Standard ISO 4416 (old: nas1638) for cleanliness class specifications



- Transport protection with a plate and rubber in between or plug against damage and dirt (see catalogue 4100 chapter M AP...)

Pressure testing on request

Installation of Flare Flanges

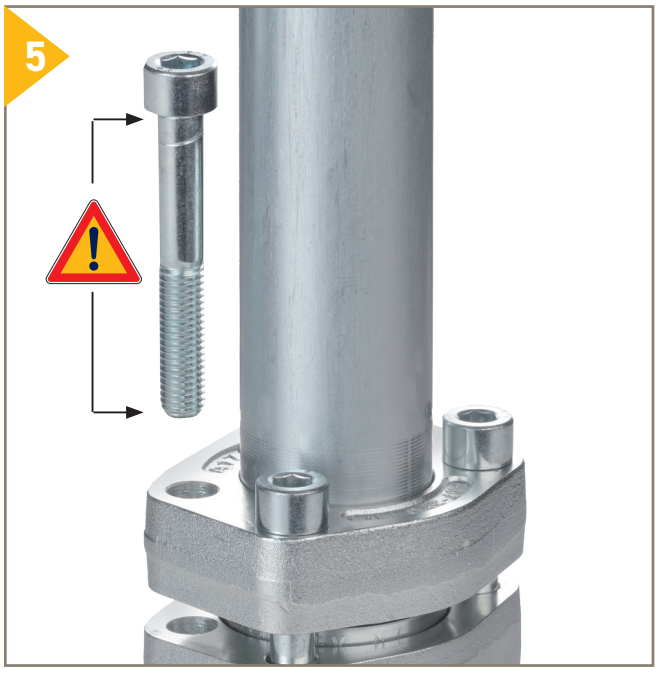
- Flared pipe must be clean
- Use plastic hammer to fix insert if neccessary
- Avoid damage of sealing surfaces

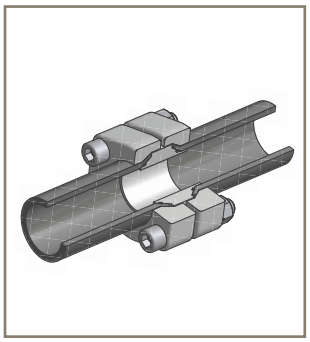
- Flared pipe must be clean
- If necessary the sealing could be lubricated for easier assembly
- Lubricate the seal with grease to asure position during installation

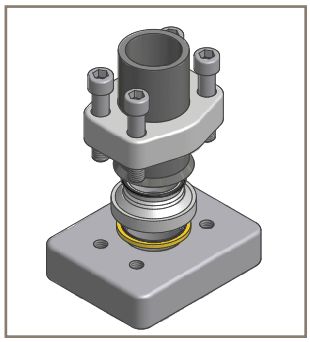
- Make sure sealing surfaces are clean and not damaged

Recommended nuts and bolts

- Be sure that the used nuts are qualified for the strength category of the bolts
- Lubricate bolts acc. to page 14 (recommended lubrication MOLYKOTE G-RAPID PLUS)

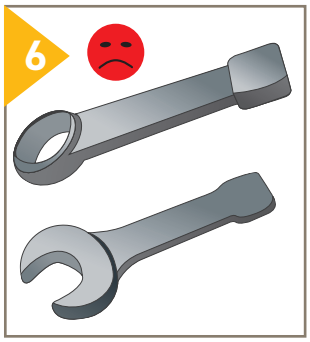


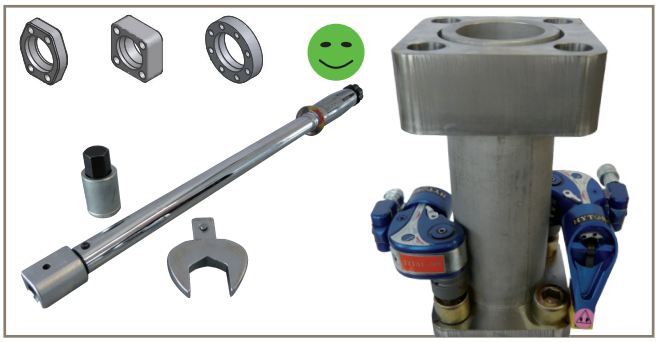




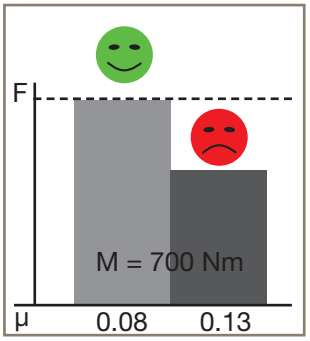
⚠ Check bolt length
⚠ Too short bolt length can led to thread shear with the risk of disconnection under pressure

Installation of Flare Flanges





⚠ Parker recommends to use only calibrated manuall or hydraulic torque tools!

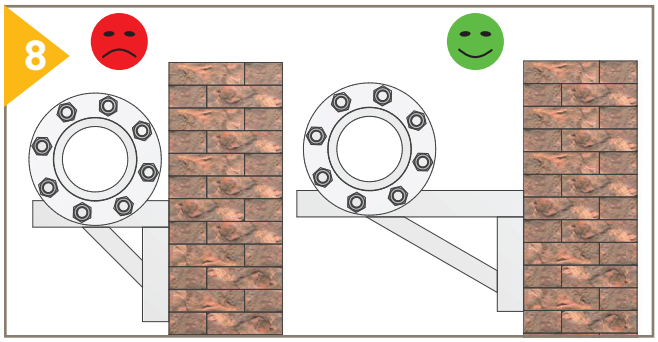


- The friction coefficient is strongly affected by proper lubrication. Using unsuitable lubrication can lead to undertigh-tend flange connections
  ⚠ Only Parker recom-mended lubricants are to be used

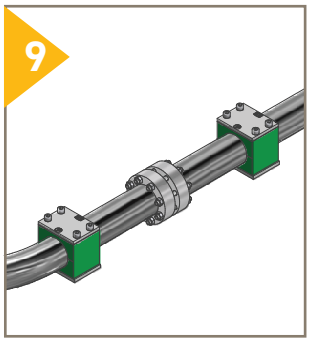
- Parker recommends to lubricate (MOLYKOTE® G-RAPID PLUS) the contact surface from the bolt head and the lower third thread of the bolt. The lubricated bolts are to be mounted immediately to avoid pollution of the thread or the surface

For proper installation procedures, bolt sizes and quality, torque values see next pages.

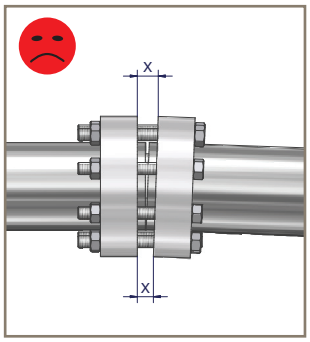
Installation of Flare Flanges: Important before bolt tightening

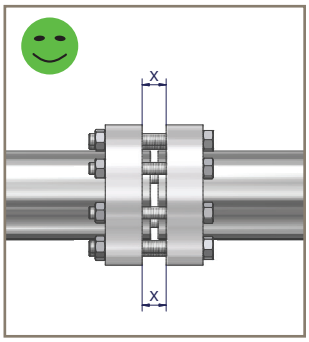


- Take care of having enough space for mounting and tooling



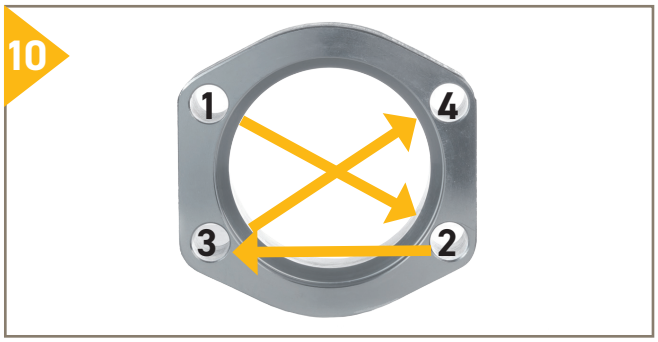
- Parker recommends to tighten the tube connection at first. After that the tube clamps can be tightend

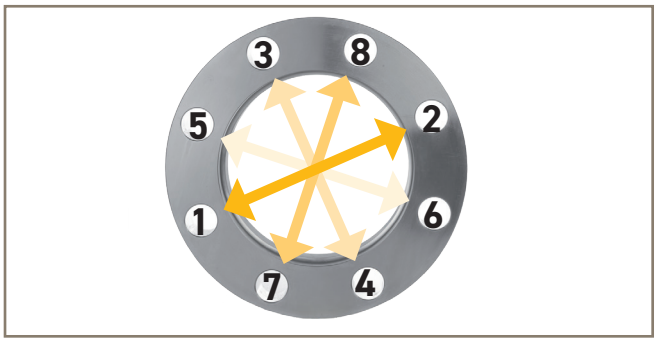




- The tubes / flanges have to be parallel and axial aligned bevor tightening the bolts. Parker does not recommend to straighten the tube by tightening the bolts of the flanges

Installation of Flare Flanges: Use of 1 tool





- Torque bolts in opposite positions in small increments to the appropriate torque level on page 32-35

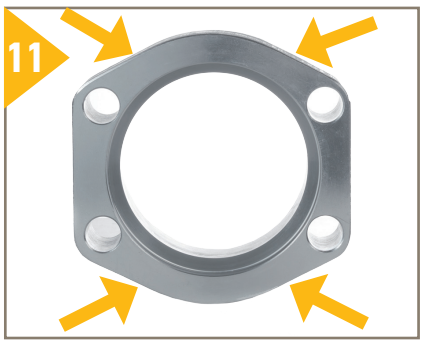
1: Light tightening with socket screw wrench by hand
2: Apply 30% of specified torque acc. to picture above.
3: Apply 60% of specified torque acc. to picture above.
4: Apply 100% of specified torque acc. to picture above.
5: Apply 100% of specified torque in circular pattern (clockwise)

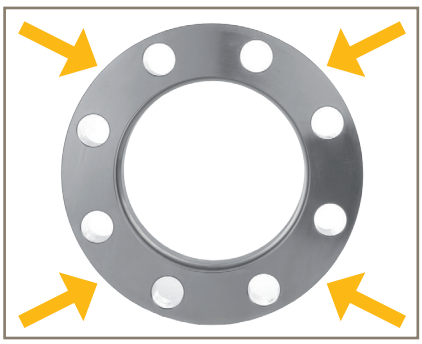
- In case of the tube lines have to be pressure tested with a pressure exceeding the working pressure of the flange (e.g. PN x 1,5 test pressure) a repeat of step 6 is required after the pressure test.

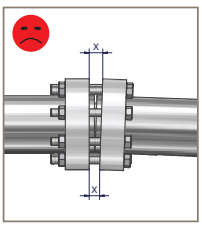
6: Retightening might be required after one week of operation depending on the dynamic of the system. We recommend to check at least 10% of the connections according to the following method:

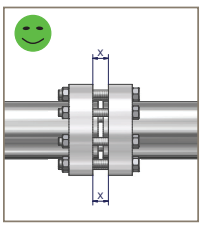
- Apply 70% of the specified torque.
- If the bolts stand still: the pretension is o.k., no further retightening required.
- If the bolts can be turned further, retorque all connections with 90% of the specified torque (1 time only)

- It is recommended to tighten this flange types with minimum two tools.





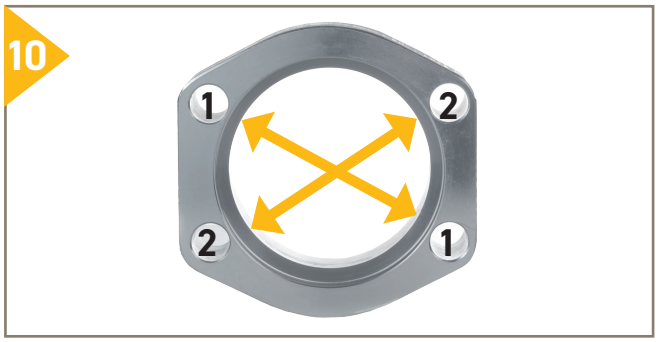


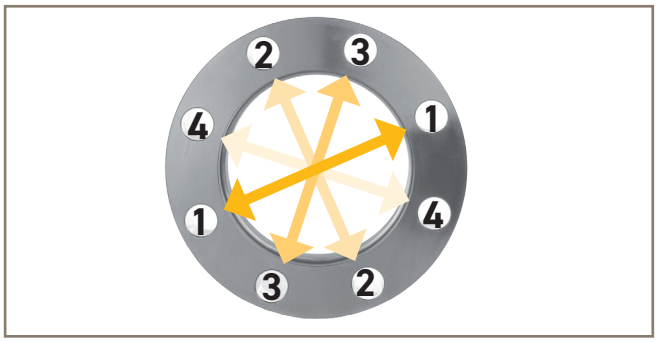


- Check:
  Flange gap must be the same at all 4 points.

- Check:
  Flange gap must be the same at all 4 points (round flanges and square flanges).

Installation of Flare Flanges: Use of 2 tools





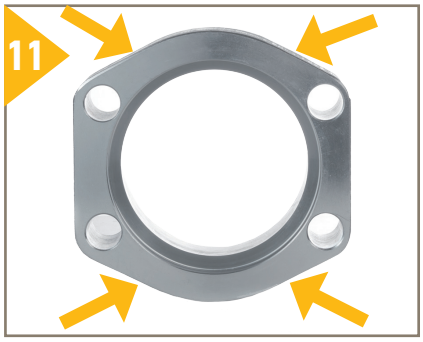
- Torque bolts in opposite positions in small increments to the appropriate torque level on page 32-35

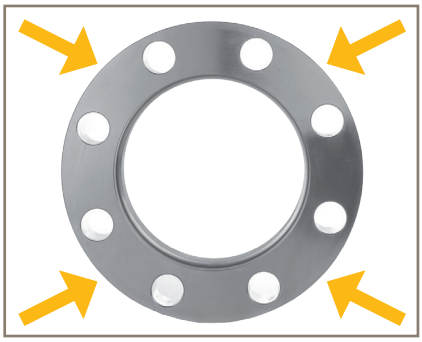
1: Light tightening with socket screw wrench by hand
2: Apply 30% of specified torque acc. to picture above.
3: Apply 60% of specified torque acc. to picture above.
4: Apply 100% of specified torque acc. to picture above.
5: Apply 100% of specified torque in circular pattern (clockwise)

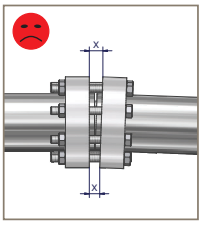
- In case of the tube lines have to be pressure tested with a pressure exceeding the working pressure of the flange (e.g. PN x 1,5 test pressure) a repeat of step 6 is required after the pressure test.

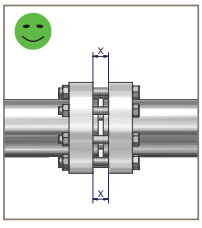
6: Retightening might be required after one week of operation depending on the dynamic of the system. We recommend to check at least 10% of the connec tions according to the following method:

- Apply 70% of the specified torque.
- If the bolts stand still: the pretension is o.k., no further retightening required.
- If the bolts can be turned further, retorque all connections with 90% of the specified torque (1 time only)





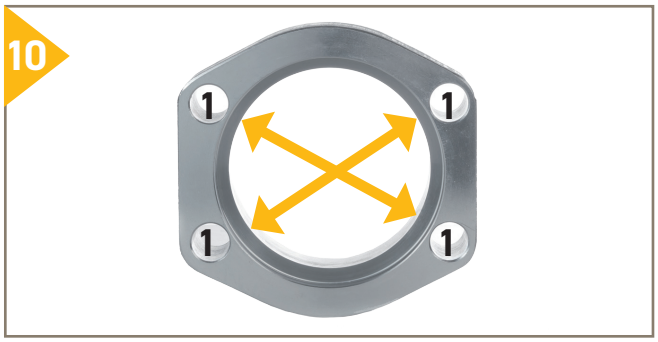


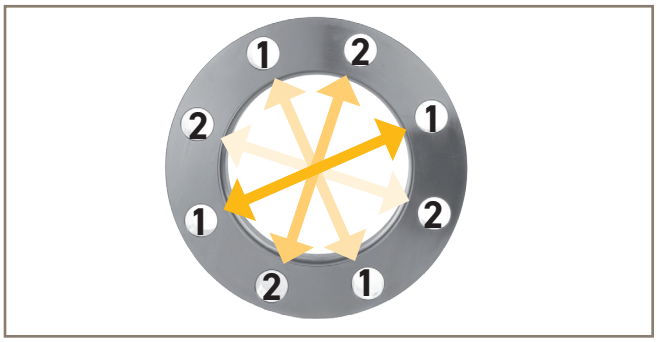


- Check:
  Flange gap must be the same at all 4 points.

- Check:
  Flange gap must be the same at all 4 points (round flanges and square flanges).

Installation of Flare Flanges: Use of 4 tools





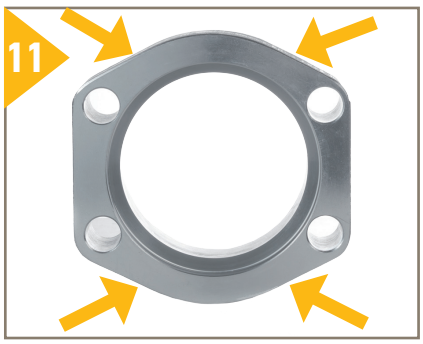
- Torque bolts in opposite positions in small increments to the appropriate torque level on page 32-35

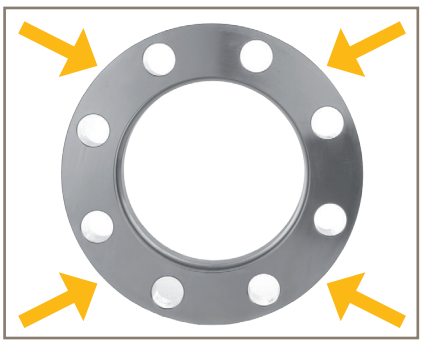
1: Light tightening with socket screw wrench by hand
2: Apply 100% of specified torque acc. to picture above.
3: Apply 100% of specified torque in circular pattern (clockwise)

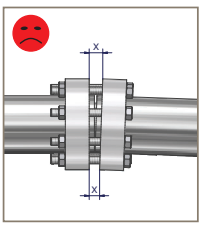
- In case of the tube lines have to be pressure tested with a pressure exceeding the working pressure of the flange (e.g. PN x 1,5 test pressure) a repeat of step 3 is required after the pressure test.

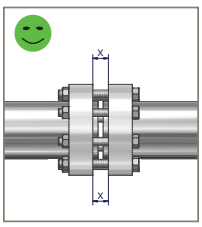
4: Retightening might be required after one week of operation depending on the dynamic of the system. We recommend to check at least 10% of the connections according to the following method:

- Apply 70% of the specified torque.
- If the bolts stand still: the pretension is o.k., no further retightening required.
- If the bolts can be turned further, retorque all connections with 90% of the specified torque (1 time only)





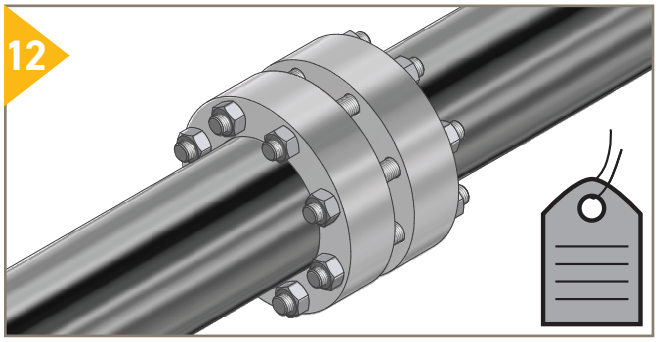




- Check:
  Flange gap must be the same at all 4 points.

- Check:
  Flange gap must be the same at all 4 points (round flanges and square flanges).

Installation of Flare Flanges: Important after bolt tightening



- Parker recommends to take mounting documentation for every flange connection

Reassembly:

- Mark the component positions before disconnecting.
- Check seals for damage and deformation and replace if required
- Reassemble according to the same procedure as the initial tightening

Appropriate torque level - SAE 1000/ISO 6162-1 footprint

SAE 1000 Flaring, working pressure up to 70 bar

Flange Type	Soft Seal / Flat Face		Nut	Recommended torques*			
	Recommended Bolts Tube to Port	Recommended Bolts Tube to Tube		ZNFL (10.9)	ELZ (8.8)	HDG (8.8)	A4-80
F37-124	4x ZYLS12X40	4x ZYLS12X70	4x ISO4032-M12	not recommended	45Nm	50Nm	45NM
F37-132	4x ZYLS12X45	4x ZYLS12X80	4x ISO4032-M12	not recommended	45Nm	50Nm	45Nm
F37-140	4x ZYLS12X50	4x ZYLS12X90	4x ISO4032-M12	not recommended	45Nm	50Nm	45Nm
F37-148	4x ZYLS16X60	4x ZYLS16X100	4x ISO4032-M16	not recommended	85Nm	95Nm	85Nm
F37-156	4x ZYLS16X60	4x ZYLS16X100	4x ISO4032-M16	not recommended	85Nm	95Nm	85Nm
F37-164	4x ZYLS16X65	4x ZYLS16X120	4x ISO4032-M16	not recommended	85Nm	95Nm	85Nm

SAE 1000 Flaring, working pressure up to 50 bar

Flange Type	Soft Seal / Flat Face		Nut	Recommended torques*			
	Recommended Bolts Tube to Port	Recommended Bolts Tube to Tube		ZNFL (10.9)	ELZ (8.8)	HDG (8.8)	A4-80
F37-180	4x ZYLS16X65	4x ZYLS16X120	4x ISO4032-M16	not recommended	100Nm	110Nm	100Nm
F37-196	6x ZYLS16X65	6x ZYLS16X110	6x ISO4032-M16	not recommended	100Nm	110Nm	100Nm
F37-1128	8x ZYLS20X80	8x ZYLS20X145	8x ISO4032-M20	not recommended	175Nm	195Nm	175Nm
F37-1160	8x ZYLS20X80	8x ZYLS20X150	8x ISO4032-M20	not recommended	175Nm	195Nm	175Nm

*Use for bolts acc. ISO 4762 (DIN 912) lubricated with MOLYKOTE® G-RAPID PLUS Description in parentheses = property class for screws

ZNFL: Zinc flaked
ELZ: Electrolytic zinc plated
HDG: Hot dipped galvanized
A4-80: Stainless steel

Appropriate torque level - SAE 3000/ISO 6162-1 footprint

SAE 3000 Flaring, working pressure up to 350 bar

Flange Type	Soft Seal / Flat Face / Bonded Seal		Nut	Recommended torques*			
	Recommended Bolts Tube to Port	Recommended Bolts Tube to Tube		ZNFL (10.9)	ELZ (8.8)	HDG (8.8)	A4-80
F37-308	4x ZYLS8X35	4x ZYLS8X55	4x ISO4032-M8	21Nm	15Nm	15Nm	15Nm
F37-312	4x ZYLS10X40	4x ZYLS10x65	4x ISO4032-M10	43Nm	31Nm	31Nm	31Nm
F37-316	4x ZYLS10X45	4x ZYLS10X75	4x ISO4032-M10	43Nm	31Nm	31Nm	31Nm

SAE 3000 Flaring, working pressure up to 280 bar

Flange Type	Soft Seal / Flat Face / Bonded Seal		Nut	Recommended torques*			
	Recommended Bolts Tube to Port	Recommended Bolts Tube to Tube		ZNFL (10.9)	ELZ (8.8)	HDG (8.8)	A4-80
F37-320	4x ZYLS10X40	4x ZYLS10X70	4x ISO4032-M10	43Nm	31Nm	31Nm	31Nm
F37-324	4x ZYLS12X45	4x ZYLS12X80	4x ISO4032-M12	75Nm	55Nm	60Nm	55Nm
F37-332	4x ZYLS12X55	4x ZYLS12X100	4x ISO4032-M12	75Nm	60Nm	65Nm	55Nm

SAE 3000 Flaring, working pressure up to 210 bar

Flange Type	Soft Seal / Flat Face / Bonded Seal		Nut	Recommended torques*			
	Recommended Bolts Tube to Port	Recommended Bolts Tube to Tube		ZNFL (10.9)	ELZ (8.8)	HDG (8.8)	A4-80
F37-340	4x ZYLS12X65	4x ZYLS12X120	4x ISO4032-M12	75Nm	60Nm	65Nm	55Nm
F37-348	4x ZYLS16X80	4x ZYLS16X140	4x ISO4032-M16	175Nm	125Nm	140Nm	125Nm

*Use for bolts acc. ISO 4762 (DIN 912) lubricated with MOLYKOTE® G-RAPID PLUS Description in parentheses = property class for screws

ZNFL: Zinc flaked
ELZ: Electrolytic zinc plated
HDG: Hot dipped galvanized
A4-80: Stainless steel

Appropriate torque level - SAE 6000/ISO 6162-2 footprint

SAE 6000 Flaring, working pressure up to 420 bar

Flange Type	F37 Seal / Flat Face / Bonded Seal		Nut	Recommended torques*			
	Recommended Bolts Tube to Port	Recommended Bolts Tube to Tube		ZNFL (10.9)	ELZ (8.8)	HDG (8.8)	A4-80
F37-608	4x ZYLS8X35	4x ZYLS8X65	4x ISO4032-M8	21Nm	15Nm	15Nm	15Nm
F37-612	4x ZYLS10X45	4x ZYLS10X75	4x ISO4032-M10	43Nm	31Nm	31Nm	31Nm
F37-616	4x ZYLS12X45	4x ZYLS12X75	4x ISO4032-M12	75Nm	55Nm	60Nm	55Nm
F37-620 H12	4x ZYLS12X55	4x ZYLS12X90	4x ISO4032-M12	75Nm	55Nm	60Nm	55Nm
F37-620	4x ZYLS14X55	4x ZYLS14X90	4x ISO4032-M14	115Nm	80Nm	85Nm	80Nm
F37-624	4x ZYLS16X60	4x ZYLS16X100	4x ISO4032-M16	175Nm	125Nm	140Nm	125Nm
F37-632	4x ZYLS20X70	4x ZYLS20X120	4x ISO4032-M20	250Nm	175Nm	195Nm	175Nm
F37-64073	4x ZYLS24X100	4x ZYLS24X160	4x ISO4032-M24	435Nm	310Nm	340Nm	340Nm

*Use for bolts acc. ISO 4762 (DIN 912) lubricated with MOLYKOTE® G-RAPID PLUS Description in parentheses = property class for screws

ZNFL: Zinc flaked
ELZ: Electrolytic zinc plated
HDG: Hot dipped galvanized
A4-80: Stainless steel

Appropriate torque level - ISO 6164 footprint

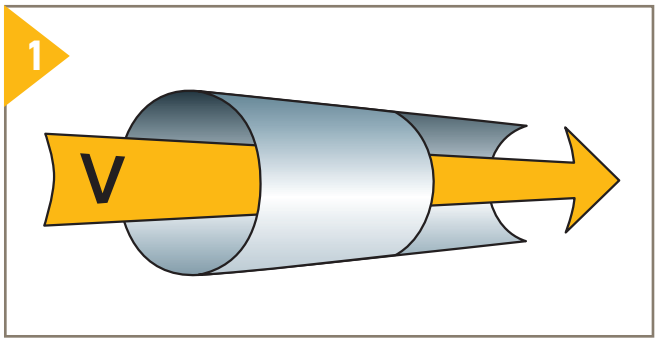
ISO 6164 Flaring, working pressure up to 400 bar

Flange Type	F37 Seal / Flat Face / Bonded Seal		Nut	Recommended torques*			
	Recommended Bolts Tube to Port	Recommended Bolts Tube to Tube		ZNFL (10.9)	ELZ (8.8)	HDG (8.8)	A4-80
F37-432	4x ZYLS16X65	4x ZYLS16X110	4x ISO4032-M16	175Nm	125Nm	140Nm	125Nm
F37-440	4x ZYLS20X80	4x ZYLS20X140	4x ISO4032-M20	275Nm	225Nm	245Nm	225Nm
F37-44073	4x ZYLS20X90	4x ZYLS20X160	4x ISO4032-M20	275Nm	225Nm	245Nm	225Nm
F37-448	4x ZYLS24X90	4x ZYLS24X150	4x ISO4032-M24	435Nm	350Nm	390Nm	390Nm
F37-448909	4x ZYLS24X110	4x ZYLS24X190	4x ISO4032-M24	435Nm	350Nm	390Nm	390Nm

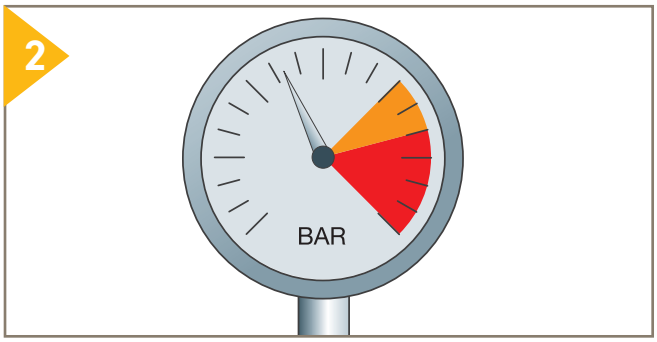
*Use for bolts acc. ISO 4762 (DIN 912) lubricated with MOLYKOTE® G-RAPID PLUS Description in parentheses = property class for screws

ZNFL: Zinc flaked
ELZ: Electrolytic zinc plated
HDG: Hot dipped galvanized
A4-80: Stainless steel

Getting pipework ready for operation



- System must be completely cleaned



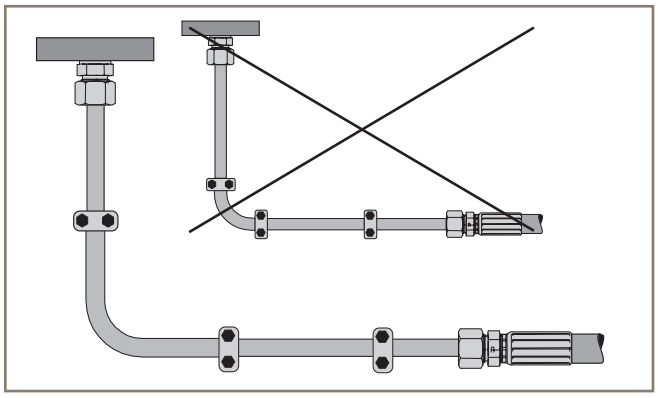
- System must be leakage and pressure tested according to project or classification specification

⚠ Follow all relevant safety regulations

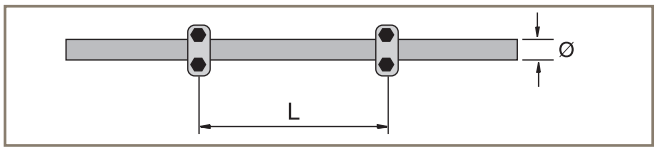
Reassembly

- Make sure that there is no pressure in the system
- Disassembling has to be done with great caution
- Loosen bolts similar to assembly. During disassembling make sure that there is no pressure left in the system
- Parker recommends that all sealings, nuts and bolts are replaced before reassembling
- For reassembling follow the installation instructions above
- For further information or direct support see last page

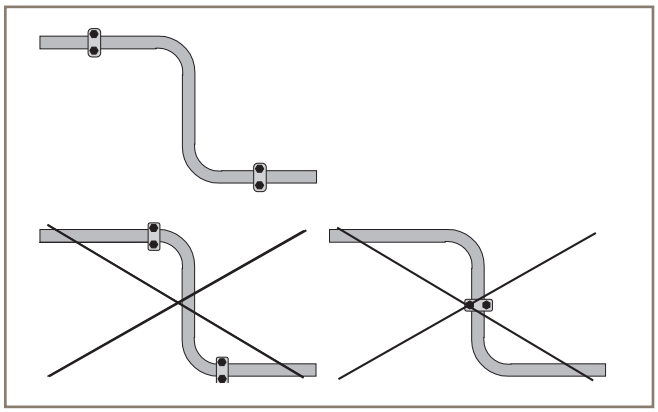
Tube line fabrication guide for leak-free systems



- Tube lines have to be supported in certain distances
- Use sufficient tube clamps to support weight
- Use sufficient tube clamps to protect joints from vibration
- Vibration has to be eliminated near by the connectors



Ø [mm]	Marine/Offshore L [m]	Industrial/Landbased L [m]
6.0 - 12.7	1.0	1.0
12.7 - 22.0	1.1	1.2
22.0 - 32.0	1.4	1.5
32.0 - 38.0	1.5	1.5
38.0 - 57.0	1.8	2.0
57.0 - 75.0	2.0	2.0
75.0 - 76.1	2.1	
76.1 - 88.9	2.2	
88.9 - 102.0	2.5	
102.0 - 114.0	2.5	
114.0 - 168.0	2.5	
168.0 - 219.0	2.5	



- Allow expansion and contraction. Do not hamper expansion and contraction near by tube bends:

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