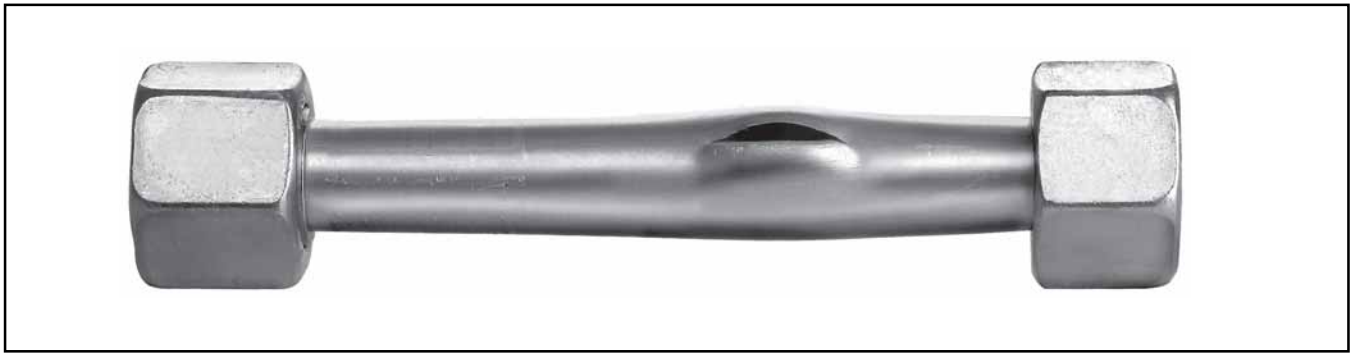
# Assembly Instructions SAE Fittings

*4320/UK*
*August 2005*

# Contents

# Safety instructions

## Tube fittings are safe high-pressure connections



A carefully assembled Parker tube fitting will provide a sealed joint even up to tube burst. Experience has shown that break-downs, re-tightening and leaks can be avoided by following these safety instructions. Please review your fitting procedures.

### General safety instructions

- Uncomplete assembly will reduce the pressure and vibration capability of a fitting. It can reduce the life cycle time of a connection and leakage can occur. In extreme cases the connection can fail due to tube shear or tube crack.
- After opening a tube connection, the unit has to be retightened with the same force used during prior assembly. Undertightening can result in leakage and can reduce the vibration resistance. Overtightening can reduce the possibilities of repeated assembly.
- Do not use hand cutters or tube cutters.
- Dirt and metal contamination can lead to damage to the system and leaks.
- The operating parameters given (e.g. pressure, temperature, medium compatibility) are to be adhered to.
- Avoid flow rates > 8 m/s. The resulting forces are high and can destroy the tube lines.
- Relevant guidelines (e.g. CE, ISO, BG, TÜV, DIN) are to be observed.
- Weld fittings are manufactured out of weldable materials. No other fittings are suitable for welding.
- EO-Niromont and Parflange LUBSS are high-performance lubricants. The use of other lubricants generally leads to an increase in assembly force.
- The tools and lubricants recommended by Parker guarantee safe

In extreme cases the components can be destroyed.

- Parker tube fittings are intended solely for connections for fluid applications.
- Observe tube recommendations. Non-standard materials or tolerances lead to incorrect assembly.
- Do not use ball bearings, fitting pins or tapered pins, coins or washers instead of the correct Parker blanking plug as blanking parts for 24° cones.
- Tube connection and fitting body once assembled, should remain together. Fitting body is to be used once only for pre-assembly.
- Air bleeding of tube fittings which are under pressure can be dangerous.
- Tube under tension can lead to vibration failure. Tube length and bend angles are to be adhered to precisely. Fix tube lines with tube clamps.
- Tubes are not to be clamped to one another but to suitable fixed points. Plate brackets, cable connections and fixing elements are not suitable. Tubes are not mountings on which to integrate other components e.g. filters, ventilators or shut-off valves.
- Prevent oscillation, pressure surges and inherent strain by using flexible hoses for example.
- Under and overtightening of fittings during assembly reduces the capacity for withstanding pressure and vibration loads and therefore reduces the life of the tube fitting. Leaks from the tube can occur under these circumstances.
- When dismantling/transporting and re-assembling, make sure that no dirt enters the system, that the connection elements (threads, sealing surfaces) are not damaged, seals are not lost and tubes are not bent or flattened. We recommend the use of suitable protective caps.
- Disassembled fittings are to be checked for accuracy and damage and replaced if necessary.

assembly.

- Components and tooling of different manufacturers are not necessarily compatible. For complete safety, use only Parker components.
- Fittings are to be handled with care.
- Tubelines need to be adapted tension free of the relevant connectors before assembly. An easy turning of the nut is required for the complete thread length. Otherwise leakage can occur. In extreme cases with additional vibrations tube cracks can occur.
- Vibrations have to be clamped by tube clamps. Independent vibrating units need to be separated with hoses. Otherwise tube cracks can occur.

## Specific safety instructions for assembly

- During a progressive ring and EO-2 fitting assembly the tube has to bottom up in the stud or in the tool. Without tube bottoming the ring cannot bite sufficiently. Under load the connection can fail due to tube shear.
- Correctly flared tubes are essential for leak free performance of O-Lok® and Triple-Lok® fittings. Special care must be taken over the flare diameter and surface finish.
- Preset bite type fittings (progressive ring) need a final assembly according to assembly instructions.
- Stainless steel progressive ring fittings have to be preassembled in hardened tools. Otherwise the connection may fail under load due to tube shear.
- Do not assemble progressive rings and functional nuts on self-made standpipe stud ends. There is a risk of false assembly with the result of connection shear under load.
- The use of steel cutting rings for stainless steel tubes or other unauthorised tool combinations leads to incorrect assembly.

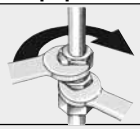
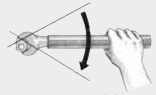
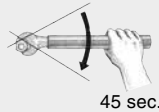
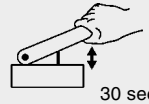
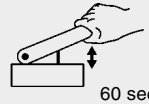
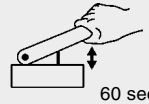
**In case of doubt please contact your Parker representative!**

# Selection of assembly process for tube forming systems

## Workshop machines for industrial assembly

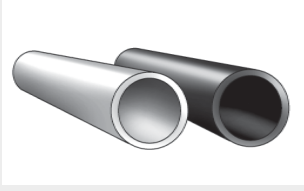
| Process | | | Product | |
|---|---|---|---|---|
| **Procedure** | **Equipment** | **Process/Time*** | **Triple-Lok®** | **O-Lok®** |
| Pre-assembly using EOMAT II machine |  |  30 sec. | suitable for workshop assembly<br>preferred process is Parflange | not applicable |
| Pre-assembly using EOMAT III machine |  |  30 sec. | suitable for workshop assembly<br>preferred process is Parflange | not applicable |
| Tube forming using EO2-FORM F3 machine |  |  40 sec. | not applicable | not applicable |
| Tube flaring using Parflange® 1025 machine |  |  45 sec. | ideal for workshop assembly<br>not recommended for mass production<br>not suitable for assembly of SS tubes over 25mm | ideal for workshop assembly<br>not recommended for mass production<br>not suitable for assembly of SS tubes over 25mm |
| Tube flaring using Parflange® 1050 machine |  |  30 sec. | ideal for workshop assembly<br>and serial production | ideal for workshop assembly<br>and serial production<br>automatic sleeve feeder available<br>for mass production |

## Manual assembly for field repair

| Process | | | Product | |
|---|---|---|---|---|
| **Procedure** | **Equipment** | **Process/Time*** | **Triple-Lok®** | **O-Lok®** |
| Direct in fitting |  |  60 sec. | not possible use KarryFlare or hand flaring tools for field repair | not possible use braze sleeves for field repair |
| Pre-assembly in vice |  |  45 sec. | not possible use KarryFlare or hand flaring tools for field repair | not possible use braze sleeves for field repair |
| Flaring in vice |  |  120 sec. | field repair only not for efficient production not for stainless steel tubes | not possible use braze sleeves for field repair |
| Pre-assembly using HVM-B device |  |  30 sec. | not applicable | not applicable |
| Pre-assembly using EO-KARRYMAT |  |  60 sec. | not applicable | not applicable |
| Tube flaring using KarryFlare |  |  60 sec. | ideal for repair jobs and small on-site installations not suitable for industrial production | not applicable |

*Average for total assembly time of medium size fitting including assembly check and final tightening

# O-Lok® assembly instructions



## Tube selection

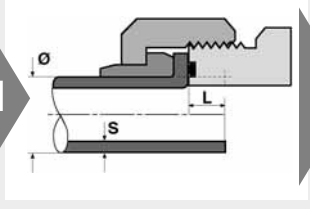
- Select suitable tube material

| Steel tube | | Stainless Steel tube | |
|---|---|---|---|
| Cold drawn seamless | Welded & redrawn | Cold drawn seamless | |
| NF A 49330 | NF A 49341 | | |
| ISO 3304 R | DIN2393 | NF A 49341 | |
| DIN 2391C pt 1 | BS 3602/2 | DIN 17458 DA/T3 | |
| BS 3602 pt1 | SAE J525 | ASTM A 269 | 1.4571 on request |
| SAE J524 | | | |

## Tube preparation

- Cut and deburr thoroughly

**1**




- Calculate tube length before cutting
- Add extra length “L“

**2**


- Minimum length of straight tube-ends **(see chart below)**

**3**

- Cut tube squarely
- max. ±1° deviation

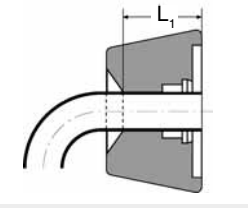
⚠ Do not use pipe cutters

**4**

- Remove internal and external burrs
- max. chamfer 0.3mm x 45°
- Recommendation: In-Ex Tube Deburring Tool 226

● Use tube-cutting tool AV for manual cutting

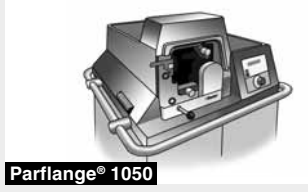
⚠ Proper deburring and cleaning of inner diameter essential for sealing surface quality




| Metric tube [mm] | | Minimum straight length | Extra length ~ L [mm] for Tube Wall thickness | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tube Ø | Wall thickness | to start to bend L1 [mm] | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | 5 | | | |
| 6 | 1.0 - 1.5 | 40 | 4.5 | 5.5 | | | | | | | | | |
| 8 | 1.0 - 2.0 | 40 | 5.0 | 5.0 | | | | | | | | | |
| 10 | 1.0 - 2.0 | 40 | 2.5 | 4.0 | 3.5 | | | | | | | | |
| 12 | 1.0 - 3.0 | 50 | 3.5 | 4.5 | 4.5 | 4.0 | 4.0 | | | | | | |
| 14 | 1.5 - 2.0 | 50 | | | 5.0 | | | | | | | | |
| 15 | 1.0 - 2.0 | 50 | | 4.5 | 5.0 | | | | | | | | |
| 16 | 1.5 - 3.0 | 50 | | 3.0 | 3.0 | 3.0 | 2.5 | | | | | | |
| 18 | 1.5 - 2.0 | 50 | | 6.0 | 5.5 | | | | | | | | |
| 20 | 2.0 - 3.5 | 50 | | | 3.5 | 4.0 | 4.0 | 3.5 | | | | | |
| 22 | 1.5 - 2.5 | 50 | | | 6.5 | 7.0 | | | | | | | |
| 25 | 2.0 - 4.0 | 50 | | | | 4.0 | 4.5 | | 4.0 | | | | |
| 28 | 1.5 - 3.0 | 50 | | | 6.0 | 7.0 | | | | | | | |
| 30 | 2.0 - 4.0 | 50 | | | 5.0 | | 5.0 | | 5.0 | | | | |
| 32 | 2.0 - 4.0 | 50 | | | | | 3.5 | | 3.5 | | | | |
| 35 | 2.0 - 3.0 | 50 | | | | | 7.0 | | | | | | |
| 38 | 2.0 - 5.0 | 50 | | | | | 5.0 | | 5.0 | 4.5 | | | |
| 50 | 3.0 | 50 | | | | | 4.0 | | | | | | |

| Inch tube [inch] | | Minimum straight length | Extra length ~ L [inch] Tube Wall thickness | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tube Ø | Wall thickness | to start to bend L1 [mm] | 0.028" | 0.035" | 0.049" | 0.065" | 0.083" | 0.095" | 0.109" | 0.120" | 0.134" | 0.156" | 0.188" |
| 1/4" | 0.020 - 0.065 | 40 | 4.5 | 5.0 | 4.0 | | | | | | | | |
| 3/8"" | 0.020 - 0.095 | 40 | | 3.5 | 3.5 | 4.0 | 4.0 | 4.0 | | | | | |
| 1/2" | 0.028 - 0.095 | 50 | | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | | | | |
| 5/8" | 0.035 - 0.120 | 50 | | | 4.0 | 4.0 | 3.0 | 4.5 | 4.0 | 4.5 | | | |
| 3/4" | 0.035 - 0.156 | 50 | | | 4.0 | 4.0 | 3.0 | 2.5 | 3.5 | 4.0 | 4.5 | | |
| 1" | 0.035 - 0.188 | 50 | | | | 3.5 | 3.5 | 2.5 | 4.5 | 4.5 | 5.0 | | |
| 1.1/4" | 0.049 - 0.188 | 50 | | | | | 4.0 | 3.0 | 3.0 | 3.0 | 4.0 | 4.5 | 4.5 |
| 1.1/2" | 0.049 - 0.220 | 50 | | | | 4.5 | 4.5 | 5.0 | 5.0 | 5.0 | 5.0 | 6.0 | 5.5 |
| 2" | 0.083 - 0.120 | 50 | | | | | 4.0 | 4.0 | | 5.0 | | | |

# O-Lok® assembly instructions



Parflange® 1050

Parflange® 1025

## O-Lok® machine flanging and assembly

- Preferred method
- Most efficient method
- Parflange® recommended

1


Parflange® machines:
- Select flaring pin according to tube dimensions
- Use special “SS“ pin for stainless steel tube
- Pin must be clean and free of wear, damage and metal particles
- Keep flaring pin clean and lubricate regularly

2


- Select flanging dies according to tube dimensions
- Use special “SS“ dies for stainless steel tube to avoid contact corrosion
- Grip surface must be clean and free of wear
- Use only genuine Parker tooling for flanging O-Lok®

3

- Load pin into machine
- Ensure lubricating system is filled with oil (LUBSS)

4

- Place sleeve in lower die half
- Locate upper die half onto lower half

**5**

- Place the dies in the die housing

**6**

- Slide nut onto tube before flanging!
- Open threads towards machine

**7**

⚠ Press tube firmly into the die against the tube stop

**8**

- Pull down the handle to clamp the tube in the dies (1025)
- 1050 die clamping automatic in cycle
- Press button to start flanging cycle

⚠ Keep hands clear off the working area

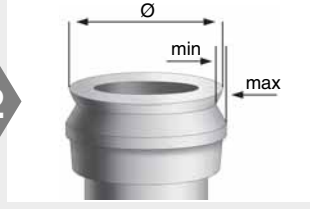
**9**

- Parflange® 1025: Unclamp the dies
- Remove tube from machine
- Use die separator to free tube
- Parflange® 1050: Die unclamping is automatic

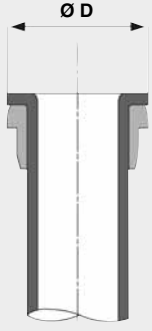
# O-Lok® assembly instructions

## Checking of flange


- Clean flange for inspection
- ⚠ Check sealing surface for cracks, burrs, scratches and pitting

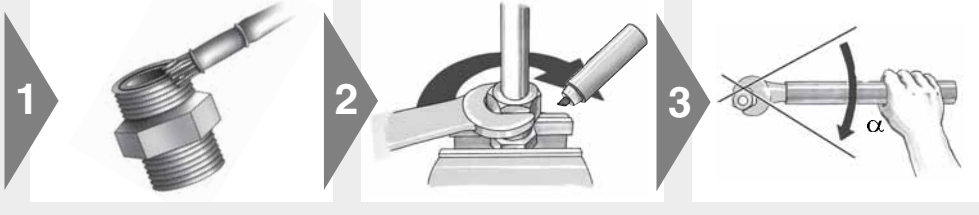



- Dimensional check of the flare
- Flare O.D. should not exceed outside sleeve diameter
- Flare O.D. should not be less than smaller diameter of front of sleeve
- When in doubt, measure




| Tube O.D. | | Ø D | |
|---|---|---|---|
| mm | In. | min. [mm] | max. [mm] |
| 6 | 1/4" | 12.10 | 12.75 |
| 8 | | 14.90 | 15.75 |
| 10 | 3/8" | 14.90 | 15.75 |
| 12 | 1/2" | 18.00 | 18.90 |
| 14 | | 22.20 | 23.45 |
| 15 | | 22.20 | 23.45 |
| 16 | 5/8" | 22.20 | 23.45 |
| 18 | | 26.20 | 27.80 |
| 20 | 3/4" | 26.20 | 27.80 |
| 22 | | 32.40 | 34.20 |
| 25 | 1" | 32.40 | 34.20 |
| 28 | | 39.00 | 40.55 |
| 30 | | 39.00 | 40.55 |
| 32 | 1.1/4" | 39.00 | 40.55 |
| 35 | | 47.00 | 48.50 |
| 38 | 1.1/2" | 47.00 | 48.50 |
| 50 | 2" | 58.90 | 60.60 |

## Installation in fitting



- Lubricate O-Ring
- Steel fittings:
  No thread lubrication
- ⚠ Stainless steel fittings:
  Lubrication required
- EO-NIROMONT is a special high-performance lubricant for stainless steel fittings
- Thread nut onto body
- Tighten to full metal contact
- Mark body and nut as quality check
- Tighten to recommended torque level
- Recommended: Tighten with spanner the number of flats indicated $\alpha$
- 1 flat = 60°

**Tightening recommendation**

| Metric tube [mm] | Inch tube [inch] | SAE dash size | SAE thread | Assembly torque Nm -0% + 10% | | $\alpha$ flats from wrench resistance method* | |
|---|---|---|---|---|---|---|---|
| | | | | Steel | Stainless Steel | Tube | Swivel nut |
| 6 | 1/4" | -4 | 9/16-18 | 25 | 32 | 1/4 - 1/2 | 1/2 - 3/4 |
| 8 | 5/16" | -6 | 11/16-16 | 40 | 50 | 1/4 - 1/2 | 1/2 - 3/4 |
| 10 | 3/8" | -6 | 11/16-16 | 40 | 50 | 1/4 - 1/2 | 1/2 - 3/4 |
| 12 | 1/2" | -8 | 13/16-16 | 65 | 70 | 1/4 - 1/2 | 1/2 - 3/4 |
| 14 | | -10 | 1-14 | 80 | 100 | 1/4 - 1/2 | 1/2 - 3/4 |
| 15 | | -10 | 1-14 | 80 | 100 | 1/4 - 1/2 | 1/2 - 3/4 |
| 16 | 5/8" | -10 | 1-14 | 80 | 100 | 1/4 - 1/2 | 1/2 - 3/4 |
| 18 | | -12 | 1.3/16-12 | 115 | 145 | 1/4 - 1/2 | 1/3 - 1/2 |
| 20 | 3/4" | -12 | 1.3/16-12 | 115 | 145 | 1/4 - 1/2 | 1/3 - 1/2 |
| 22 | | -16 | 1.7/16-12 | 150 | 190 | 1/4 - 1/2 | 1/3 - 1/2 |
| 25 | 1" | -16 | 1.7/16-12 | 150 | 190 | 1/4 - 1/2 | 1/3 - 1/2 |
| 28 | | -20 | 1.11/16-12 | 190 | 235 | 1/4 - 1/2 | 1/3 - 1/2 |
| 30 | | -20 | 1.11/16-12 | 190 | 235 | 1/4 - 1/2 | 1/3 - 1/2 |
| 32 | 1.1/4" | -20 | 1.11/16-12 | 190 | 235 | 1/4 - 1/2 | 1/3 - 1/2 |
| 35 | | -24 | 2-12 | 245 | 305 | 1/4 - 1/2 | 1/3 - 1/2 |
| 38 | 1.1/2" | -24 | 2-12 | 245 | 305 | 1/4 - 1/2 | 1/3 - 1/2 |
| 50 | 2" | -32 | 2.1/2-12 | 490 | - | - | - |

* “Flats From Wrench Resistance“ Method for steel and stainless steel

# O-Lok® assembly instructions

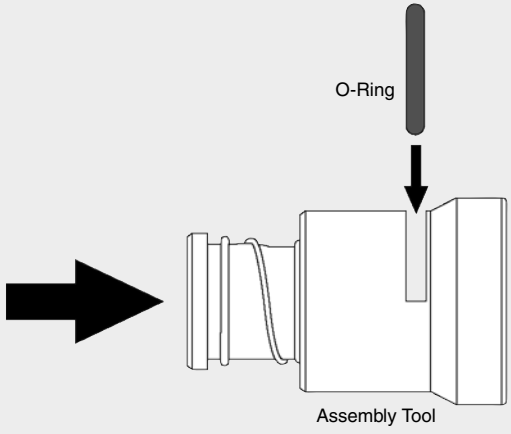
## O-Lok®: Replacement of O-Ring

- Parker CORG assembly tool should be used for O-Lok® fitting with captive O-Ring groove (O-Lok®)


- Insert the O-ring into the slot located on the side of the tool


- Position the open end of the tool over the tube-end of the fitting


- Push the piston of the tool until the O-ring is released into the fitting groove




● Function of Parker CORG assembly tool

# Triple-Lok® assembly instructions

## Tube selection

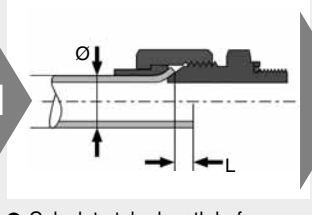
- Select suitable tube material

| Steel tube | | Stainless Steel tube |
|---|---|---|
| Cold drawn seamless | Welded & redrawn | Cold drawn seamless |
| NF A 49330 | NF A 49341 | |
| ISO 3304 R | DIN 2393 | NF A 49341 |
| DIN 2391C pt 1 | BS 3602/2 | DIN 17458 DA/T3 |
| BS 3602 pt1 | SAE J525 | ASTM A 269 |
| SAE J524 | | |

## Tube preparation

- Cut and deburr thoroughly

**1**




- Calculate tube length before cutting
- Add extra length “L“

**2**


- Minimum length $L_1$ of straight tube-ends **(see chart below)**

**3**

- Cut tube squarely
- max. ±1° deviation

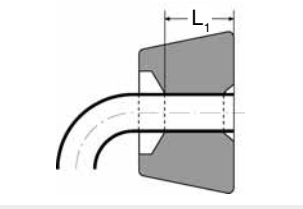
⚠ Do not use pipe cutters

- Use tube-cutting tool AV for manual cutting

**4**

- Remove internal and external burrs
- max. chamfer 0.3mm x 45°
- Recommendation: In-Ex Tube Deburring Tool 226

⚠ Proper deburring and cleaning of inner diameter essential for sealing surface quality




# Tube preparation chart

| Metric tube [mm] | | Inch tube [inch] | | extra length ~ L [mm] | Minimum straight length to start to bend L1 [mm] |
|---|---|---|---|---|---|
| Tube Ø | Wall thickness | Tube Ø | Wall thickness | | |
| 6 | 1.0 - 1.5 | 1/4" | 0.020 - 0.065 | 2 | 40 |
| 8 | 1.0 - 1.5 | 5/16" | 0.020 - 0.065 | 2 | 40 |
| 10 | 1.0 - 1.5 | 3/8" | 0.020 - 0.065 | 2 | 42 |
| 12 | 1.0 - 2.5 | 1/2" | 0.028 - 0.083 | 2.5 | 43 |
| 14 | 1.5 - 2.0 | | | 2.5 | 52 |
| 15 | 1.0 - 2.5 | | | 2.5 | 52 |
| 16 | 1.5 - 2.5 | 5/8" | 0.035 - 0.095 | 2.5 | 52 |
| 18 | 1.5 - 3.0 | | | 3 | 56 |
| 20 | 2.0 - 3.0 | 3/4" | 0.035 - 0.109 | 3 | 57 |
| 22 | 1.5 - 3.0 | | | 3 | 58 |
| 25 | 2.0 - 3.0 | 1" | 0.035 - 0.120 | 3 | 58 |
| 28 | 1.5 - 3.0 | | | 4 | 65 |
| 30 | 2.0 - 3.0 | | | 4 | 65 |
| 32 | 2.0 - 3.0 | 1.1/4" | 0.049 - 0.120 | 4 | 65 |
| 35 | 2.0 - 3.0 | | | 4 | 70 |
| 38 | 2.0 - 4.0 | 1.1/2" | 0.049 - 0.120 | 4 | 70 |
| 42* | 2.0 - 3.0 | | | 5 | 80 |

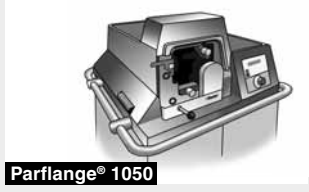
* Tube OD 42 mm:
- 1015: not suitable
- KarryFlare: special flaring pin KARRYFLARE/FPIN42 required

# Triple-Lok® assembly instructions

## 37° Flaring

## Parflange® Process

- Preferred method
- Most efficient method
- Parflange® recommended


Parflange® 1050


Parflange® 1025

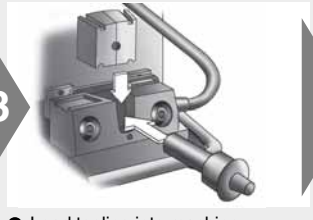
1

- Select flaring pin according to tube dimensions
- Use special “SS“ pin for stainless steel tube
- Pin must be clean and free of wear and damage
- Load tooling into machine
- Keep flaring pin clean and lubricate regularly

2


- Select flaring dies according to tube dimensions
- Use special “SS“ dies for stainless steel tube
- Grip surface must be clean and free of wear
- Use only genuine Parker tooling for flaring Triple-Lok®

3



- Load tooling into machine
- Keep sliding surfaces clean and lubricated

4

- Slide nut and sleeve as shown onto the tube-end

5

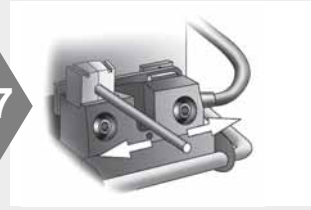
⚠ Press tube firmly into the die against the tube stop
- Parflange® 1025: Operate clamping level
- Parflange® 1050: Automatic tube clamping

6


- Hold tube firmly
- Parflange® 1025/1050: Press start button

⚠ Keep hands clear of the working area

7



- Parflange® 1025: Unclamp the dies
- Parflange® 1050: Die unclamping is automatic
- Remove tube from machine
- Use die separator to free tube

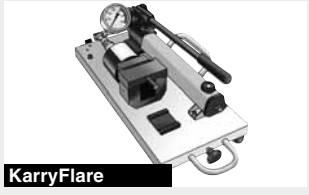
# Triple-Lok® assembly instructions

## 37° Flaring with EOMAT/ KarryFlare

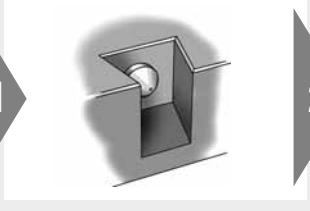
- Preferred method
- Most efficient method
- Parflange® recommended


EOMAT II


EOMAT III/A

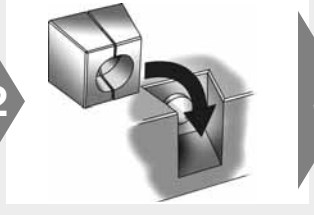

KarryFlare

**1**



- Flaring pin is integrated in flaring block
- Pin must be clean and free of wear and damage
- Keep flaring pin clean
- KarryFlare: Flaring pin for 42 mm tube O.D. must be fitted with flat face on top

**2**

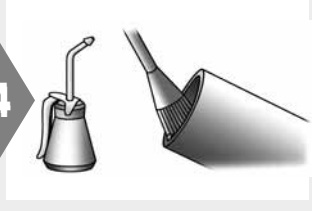


- Select flaring dies according to tube O.D.
- Grip surface must be clean and free of wear
- Use only genuine Parker tooling for flaring Triple-Lok®
- Keep sliding surfaces clean and lubricated

**3**

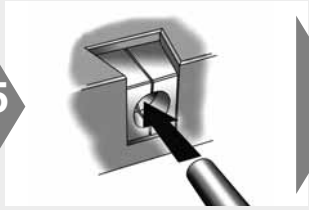
- Slide nut and sleeve as shown onto the tube-end

**4**



- Lubricate tube-end inside
- Lubricant LUBSS recommended

**5**



⚠ Press tube firmly into the die against the tube stop
- KarryFlare: Close valve on handpump
- KarryFlare: Keep lid closed

**6**


- EOMAT II: Adjustment according to pressure on machine
- EOMAT III/A: Menu selection (FLARE)
- KarryFlare: Refer to chart on machine
- Non-EOMAT-machines: check suitability

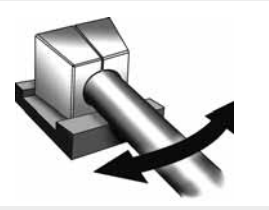
**7**


- Hold tube firmly
- EOMAT: Press and hold start button
- KarryFlare: Operate hand-pump until assembly pressure is reached

⚠ Keep hands clear off the working area

⚠ KarryFlare: Do not exceed max pressure 400 bar

**8**

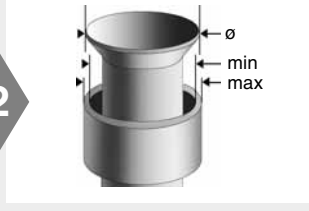


- KarryFlare: Open valve on handpump
- Remove tube from machine
- Use die separator to free tube

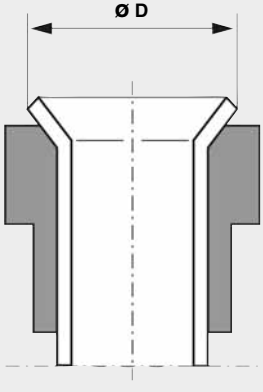
# Triple-Lok® assembly instructions

## Checking the flare


- Clean flare for inspection
- ⚠ Check sealing surface for cracks, burrs, scratches and pitting



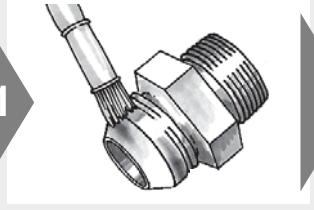

- Dimensional check of the flare
- Flare O.D. should not exceed outside sleeve diameter
- Flare O.D. should not be less than smaller diameter of front of sleeve
- When in doubt, measure




| Tube O.D. | | Ø D | |
|---|---|---|---|
| mm | inch | Min. | Max. |
| 6 | 1/4" | 8.6 | 9.7 |
| 8 | 5/16" | 10.2 | 10.3 |
| 10 | 3/8" | 11.7 | 12.7 |
| 12 | 1/2" | 16.0 | 17.3 |
| 14 | | 19.3 | 20.2 |
| 15 | | 19.3 | 20.2 |
| 16 | 5/8" | 19.3 | 20.2 |
| 18 | | 23.4 | 24.7 |
| 20 | 3/4" | 23.4 | 24.7 |
| 22 | 7/8" | 26.5 | 27.8 |
| 25 | 1" | 29.7 | 31.0 |
| 28 | | 37.6 | 38.9 |
| 30 | | 37.6 | 38.9 |
| 32 | 1.1/4" | 37.6 | 38.9 |
| 35 | | 43.2 | 45.3 |
| 38 | 1.1/2" | 43.2 | 45.3 |
| 42 | | 52.0 | 54.8 |

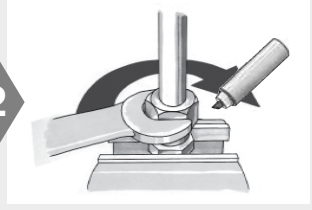
# Installation in fitting

1



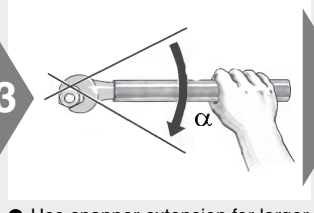
- Steel fittings: No lubrication
- ⚠ Stainless steel fittings: Lubrication required
- Use EO-NIROMONT special high-performance lubricant for stainless steel fittings

2



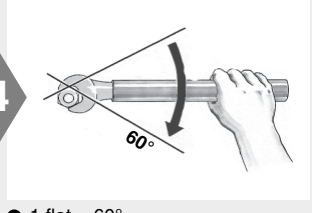
- Thread nut onto body
- Tighten to full metal contact (finger tight)
- Mark body and nut as quality check
- Tighten with spanner the number of flats indicated

3




- Use spanner extension for larger fittings (28mm)

4




- 1 flat = 60°

**Tightening recommendation**

| Metric tube [mm] | Inch tube [inch] | SAE thread | α flats from finger tight method* | | Assembly torque* Nm -0% + 10% | |
|---|---|---|---|---|---|---|
| | | | tube | Swivel nut | steel | stainless steel |
| 6 | 1/4" | 7/16-20 | 2" | 2" | 15 | 30 |
| 8 | 5/16" | 1/2-20 | 2" | 2" | 20 | 40 |
| 10 | 3/8" | 9/16-18 | 1.1/2" | 1.1/4" | 30 | 60 |
| 12 | 1/2" | 3/4-16 | 1.1/2" | 1" | 60 | 115 |
| 14 | | 7/8-14 | 1.1/2" | 1" | 75 | 145 |
| 15 | | 7/8-14 | 1.1/2" | 1" | 75 | 145 |
| 16 | 5/8" | 7/8-14 | 1.1/2" | 1" | 75 | 145 |
| 18 | | 1.1/16-12 | 1.1/4" | 1" | 110 | 180 |
| 20 | 3/4" | 1.1/16-12 | 1.1/4" | 1" | 110 | 180 |
| 22 | 7/8" | 1.3/16-12 | 1" | 1" | 135 | 225 |
| 25 | 1" | 1.5/16-12 | 1" | 1" | 175 | 255 |
| 28 | | 1.5/8-12 | 1" | | 260 | 295 |
| 30 | | 1.5/8-12 | 1" | 1" | 260 | 295 |
| 32 | 1.1/4" | 1.5/8-12 | 1" | 1" | 260 | 295 |
| 35 | | 1.7/8-12 | 1" | | 340 | 345 |
| 38 | 1.1/2" | 1.7/8-12 | 1" | 1" | 340 | 345 |
| 42 | | 2.1/4-12 | 1" | 1" | 380 | 400 |

* "Flats From Finger Tight" Method for steel and stainless steel

# Checking instructions for O-Lok® / Triple-Lok® tools

## Tools for Parflange® machines

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

**1**


- Clean pin for checking

**2**

- Visual check:
  Surface must be free of wear and damage

**3**


- Clean die halves for checking
- ⚠ Do not disassemble
- Fixing pins must not be loose or damaged

**4**

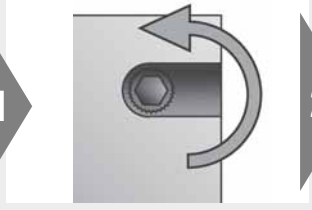
- Visual check:
  Grip surface must be clean and free of wear
- Use wire-brush to remove metal particles from grip surface

# Adjustment of Parflange® dies

- Parflange® dies can be adjusted to correct deviations of flare diameter

⚠ Re-adjustment of dies will not help if general machine setting is incorrect or components are damaged (worn tube-stop, lose screw connections)

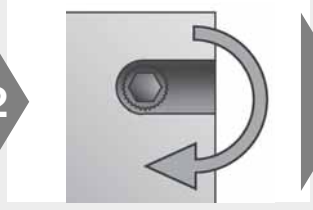
1



- To reduce the flare diameter, turn the screws anti-clockwise

⚠ Re-adjust both screws simultaneously

2



- To increase the flare diameter, turn the screws clockwise

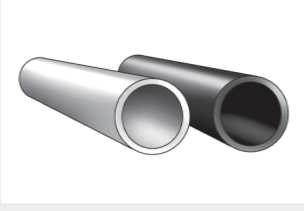
⚠ Re-adjust both screws simultaneously

3

- Adjust the screws in small stages, then check flare diameter

⚠ Lock screws to prevent misadjustment

# Flange-Seal assembly instructions



## Tube selection

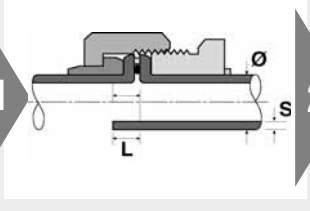
- Select suitable tube material

| Steel tube | |
|---|---|
| cold drawn seamless | Welded & redrawn |
| NF A 49330 | NF A 49341 |
| ISO 3304 R | DIN2393 |
| DIN 2391C pt 1 | BS 3602/2 |
| BS 3602 pt1 | SAE J525 |
| SAE J524 | |

## Tube preparation

- Cut and deburr thoroughly

**1**

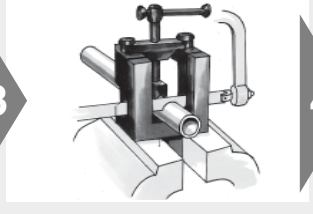



- Calculate tube length before cutting
- Add extra length “L“ **(see chart below)**

**2**

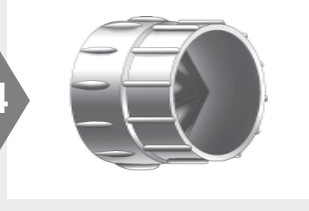

- Minimum length of straight tube-ends **(see chart below)**

**3**



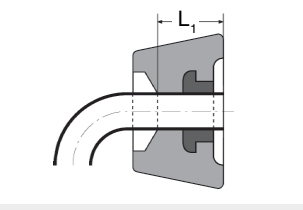
- Cut tube squarely
- max. ±1° deviation
- ⚠ Do not use pipe cutters
- Use tube-cutting tool AV for manual cutting

**4**



- Remove internal and external burrs
- max. chamfer 0.3mm x 45°
- Recommendation: In-Ex Tube Deburring Tool 226

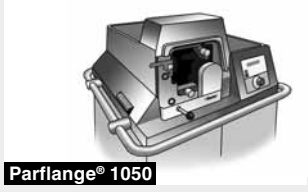
⚠ Proper deburring and cleaning of inner diameter essential for sealing surface quality




| Metric tube [mm] | | Minimum straight length | Extra length ~ L [mm] for tube wall thickness | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Tube Ø | Wall thickness | to start to bend L1 [mm] | 1 | 1.5 | 2 | 2.5 | 3 | 3.5 | 4 | |
| 6 | 1.0 - 1.5 | 50 | 4.5 | 5.5 | | | | | | |
| 8 | 1.0 - 2.0 | 50 | 5.0 | 5.0 | | | | | | |
| 10 | 1.0 - 2.0 | 50 | 2.5 | 4.0 | 3.5 | | | | | |
| 12 | 1.0 - 2.5 | 50 | 3.5 | 4.5 | 4.5 | 4.0 | | | | |
| 16 | 1.5 - 3.0 | 50 | | 3.0 | 3.0 | 3.0 | 2.5 | | | |
| 20 | 2.0 - 3.5 | 65 | | | 3.5 | 4.0 | 4.0 | 3.5 | | |

| Inch tube [inch] | | Minimum straight length | Extra length ~ L [mm] for tube wall thickness [inch] | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tube Ø | Wall thickness | to start to bend L1 [mm] | 0.028" | 0.035" | 0.049" | 0.065" | 0.083" | 0.095" | 0.109" | 0.120" | 0.134" | 0.156" | 0.188" |
| 1/4 | 0.020 - 0.065 | 40 | 4.5 | 5.0 | 4.0 | | | | | | | | |
| 3/8 | 0.020 - 0.095 | 40 | | 3.5 | 3.5 | 4.0 | 4.0 | 4.0 | | | | | |
| 1/2 | 0.028 - 0.095 | 50 | | 3.5 | 3.5 | 3.5 | 3.5 | 3.5 | | | | | |
| 5/8 | 0.035 - 0.120 | 50 | | | 4.0 | 4.0 | 3.0 | 4.5 | 4.0 | 4.5 | | | |
| 3/4 | 0.035 - 0.134 | 50 | | | 4.0 | 4.0 | 3.0 | 2.5 | 3.5 | 4.0 | 4.5 | | |

# Flange-Seal assembly instructions



Parflange® 1050

Parflange® 1025

## Flange-Seal machine flanging and assembly

- Preferred method
- Most efficient method
- Parflange® recommended

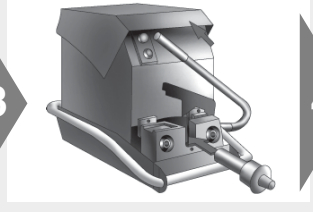
**1**

Parflange® machines:
- Select flaring pin according to tube dimensions
- Use standard O-Lok® pins
- Pin must be clean and free of wear, damage and metal particles
- Keep flaring pin clean and lubricate regularly

**2**

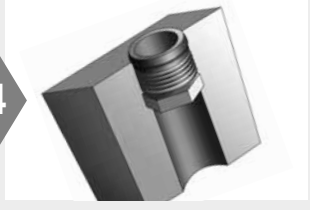

- Select flanging dies according to tube dimensions
- Use special Flange-Seal dies
- Grip surface must be clean and free of wear
- Use only genuine Parker tooling for flanging
- ⚠ Note limitation on wall thickness for tube-tube connections

**3**



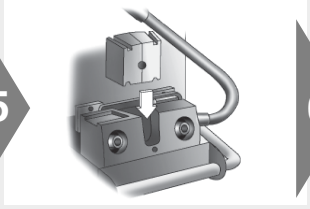
- Load pin into machine
- Ensure lubricating system is filled with oil (LUBSS)

**4**



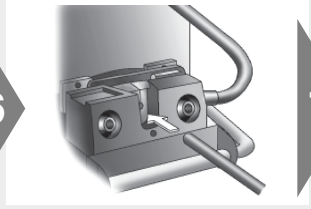
- Place threaded sleeve (LHP) in lower die half
- Locate upper die half onto lower half

5



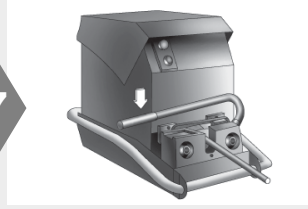
- Place the dies in the die housing

6



⚠ Press tube firmly into the die against the tube stop

7

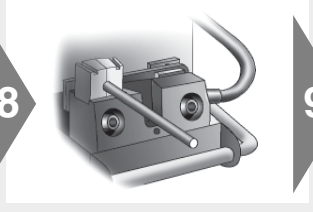


- Pull down the handle to clamp the tube in the dies (1025)
- 1050 die clamping automatic in cycle
- Press button to start flanging cycle

⚠ Keep hands clear of the working area

# Flange-Seal assembly instructions

8



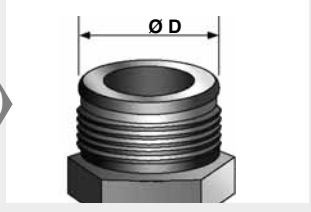
- Parflange® 1025: Unclamp the dies
- Remove tube from machine
- Use die separator to free tube
- Parflange® 1050: Die unclamping is automatic

9

- Clean flange for inspection

⚠ Check sealing surface for cracks, burrs, scratches and pitting

10




- Dimensional check of the flare

| Tube O.D. | | Ø D | |
|---|---|---|---|
| mm | In. | min. [mm] | max. [mm] |
| 6 | 1/4" | 12.10 | 12.75 |
| 8 | | 14.85 | 15.75 |
| 10 | 3/8" | 14.85 | 15.75 |
| 12 | 1/2" | 18.00 | 18.90 |
| 16 | 5/8" | 22.20 | 23.45 |
| 20 | 3/4" | 26.20 | 27.85 |

11

- Place seal into loose tube nut
- Tighten to full metal contact
- Tighten to recommended torque level

**Tightening recommendation**

| Metric tube [mm] | Inch tube [inch] | SAE dash size | SAE thread | Assembly torque Nm -0% + 10% Steel |
|---|---|---|---|---|
| 6 | 1/4" | -4 | 9/16-18 | 25 |
| 8 | 5/16" | -6 | 1.1/16-16 | 40 |
| 10 | 3/8" | -6 | 1.1/16-16 | 40 |
| 12 | 1/2" | -8 | 1.3/16-16 | 65 |
| 16 | 5/8" | -10 | 1-14 | 80 |
| 20 | 3/4" | -12 | 1.3/16-12 | 115 |

**System component guide - Flange-Seal system - Metric tubes**

| Tube O.D. (mm) | Con. dash size | Flange-Seal fitting | Seal element | Die tool* | Pin tool |
|---|---|---|---|---|---|
| 6 | 4 | LHMPS6 | 4PLS | M4018006XxxxMLHP | B3018006XxxxM |
| 8 | 6 | LHMPS8 | 6PLS | M4018008XxxxMLHP | B3018008XxxxM |
| 10 | 6 | LHMPS10 | 6PLS | M4018010XxxxMLHP | B3018010XxxxM |
| 12 | 8 | LHMPS12 | 8PLS | M4018012XxxxMLHP | B3018012XxxxM |
| 16 | 10 | LHMPS16 | 10PLS | M4018016XxxxMLHP | B3018016XxxxM |
| 20 | 12 | LHMPS20 | 12PLS | M4018020XxxxMLHP | B3018020XxxxM |

*xxx: Insert tube wall thickness according to tooling list
*Example 1: Metric tube tooling for 8x1.5mm
Die: M4018008x1.5MLHP Pin: B3018008x1.5M

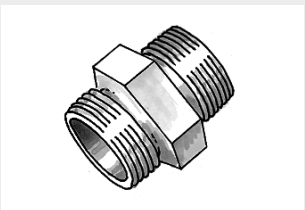
**System component guide - Flange-Seal system - Inch tubes**

| Tube O.D. (inch) | Con. dash size | Flange-Seal fitting | Seal element | Die tool* | Pin tool |
|---|---|---|---|---|---|
| 1/4" | 4 | 4LHP-S | 4PLS | M4004Xxxx180LHP | B4004Xxxx180 |
| 3/8" | 6 | 6LHP-S | 6PLS | M4006Xxxx180LHP | B4006Xxxx180 |
| 1/2" | 8 | 8LHPS | 8PLS | M4008Xxxx180LHP | B4008Xxxx180 |
| 5/8" | 10 | 10LHP-S | 10PLS | M4010Xxxx180LHP | B4010Xxxx180 |
| 3/4" | 12 | 12LHP-S | 12PLS | M4012Xxxx180LHP | B4012Xxxx180 |

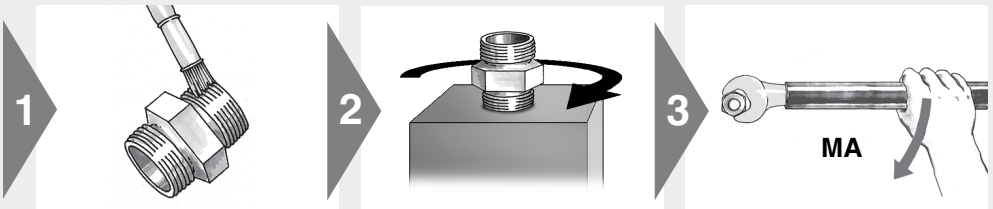
*xxx: Insert tube wall thickness according to tooling list
*Example 2: Inch tube tooling for 1/2x0.083"
Die: M4008x083180LHP Pin: B4008x083180

# Port connections

## Assembly of metric straight port connections



- Metric Thread
  DIN ISO 6149-2/3
  ISO 9974-2/3
  DIN 3852 T1/T2




⚠ Threads of stainless steel fittings must be lubricated

- EO-NIROMONT is a special high-performance lubricant for stainless steel fittings

- Screw in until handtight

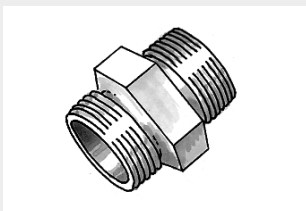
- Then tighten according to chart

**Assembly torques for metric threads**

| Product Series | Tube O.D. | Thread size T mm | Straight male stud fittings with port tapping: Form A for sealing washer Nm | Form B with face Nm | Form E with ED-sealing Nm | Form F with O-ring-sealing Nm | O-ring with sealing and retaining-ring | Non-return valves: RHV/RHZ Form E with ED-sealing Nm | EO Banjo fittings: WH / TH Nm | SWVE Nm | Adjustable ends: O-ring and retaining-ring Nm | O-ring Nm | Blanking plugs: VSTI-ED Form E with ED-sealing Nm | VSTI-OR Form F with O-ring sealing Nm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 | M10 x 1.0 | 9 | 18 | 18 | 15 | 18 | 18 | 18 | 18 | 18 | 15 | 12 | 20 |
| | 8 | M12 x 1.5 | 20 | 30 | 25 | 25 | 35 | 25 | 45 | 35 | 35 | 25 | 25 | |
| | 10 | M14 x 1.5 | 35 | 45 | 45 | 35 | 45 | 35 | 55 | 50 | 45 | 35 | 35 | |
| **EO L** | 12 | M16 x 1.5 | 45 | 65 | 55 | 40 | 55 | 50 | 80 | 60 | 55 | 40 | 50 | |
| **Triple-** | 15 | M18 x 1.5 | 55 | 80 | 70 | 45 | 70 | 70 | 100 | 80 | 70 | 45 | 65 | |
| **Lok®** | 18 | M22 x 1.5 | 65 | 140 | 125 | 60 | 160 | 125 | 140 | 120 | 180 | 60 | 90 | |
| | 22 | M26 x 1.5 | 90 | 190 | 180 | 100* | 250 | 145 | 320 | 130 | 180 | 100 | 135 | |
| | 28 | M33 x 2.0 | 150 | 340 | 310 | 160 | 310 | 210 | 360 | | 310 | 160 | 225 | |
| | 35 | M42 x 2.0 | 240 | 500 | 450 | 210 | 450 | 360 | 540 | | 450 | 210 | 360 | |
| | 42 | M48 x 2.0 | 290 | 630 | 540 | 260 | 540 | 540 | 700 | | 600 | 260 | 360 | |
| | 6 | M12 x 1.5 | 20 | 35 | 35 | 35 | | 35 | 45 | 35 | 35 | 35 | | 35 |
| | 8 | M14 x 1.5 | 35 | 55 | 55 | 45 | | 45 | 55 | 50 | 60 | 45 | | 45 |
| | 10 | M16 x 1.5 | 45 | 70 | 70 | 55 | | 55 | 80 | 60 | 95 | 55 | | 55 |
| | 12 | M18 x 1.5 | 55 | 110 | 90 | 70 | | 70 | 100 | 80 | 120 | 90 | | 70 |
| **EO S** | 14 | M20 x 1.5 | 55 | 150 | 125 | 80 | | 100 | 125 | 110 | | | 80 | 80 |
| **O-Lok®** | 16 | M22 x 1.5 | 65 | 170 | 135 | 100 | | 125 | 135 | 120 | 190 | 100 | | 100 |
| | 20 | M27 x 2.0 | 90 | 270 | 180 | 170 | | 135 | 320 | 135 | 190 | 170 | | 170 |
| | 25 | M33 x 2.0 | 150 | 410 | 310 | 310 | | 210 | 360 | | 500 | 310 | | 310 |
| | 30 | M42 x 2.0 | 240 | 540 | 450 | 330 | | 360 | 540 | | 600 | 330 | | 330 |
| | 38 | M48 x 2.0 | 290 | 700 | 540 | 420 | | 540 | 700 | | 600 | 420 | | 420 |

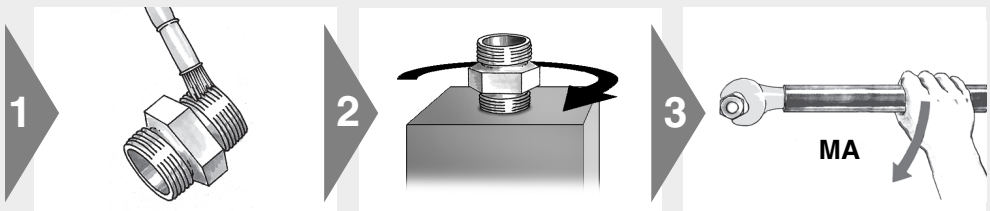
Tolerance of tightening torques listed in above table: +10%
Note: Lubricate stud with hydraulic oil before screwing in! Tightening torques relate to counterpart made of steel.
*Thread M27 x 2

# Port connections



## Assembly of BSPP straight port connections

- BSPP thread G
  ISO 1179-I
  DIN 3852 T2




⚠ Threads of stainless steel fittings must be lubricated

- EO-NIROMONT is a special high-performance lubricant for stainless steel fittings

- Screw in until handtight

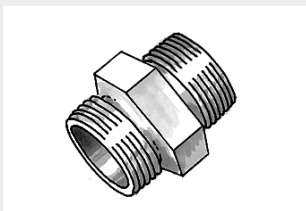
- Then tighten according to chart

**Assembly torques for BSPP threads**

| Product | Tube O.D. | Thread size T | Straight male stud fittings with port tapping: Form A for sealing washer | Form B with cutting face | Form E with ED-sealing | with O-ring sealing and retaining-ring | Non-return valves: RHV / RHZ Form E with ED-sealing | EO Banjo fittings: WH / TH | SWVE | Adjustable ends: O-ring and retaining-ring | Blanking plugs: Form E with ED-sealing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Series** | | **inch** | **Nm** | **Nm** | **Nm** | | | **Nm** | **Nm** | **Nm** | **Nm** |
| | 6 | G 1/8A | 9 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 13 |
| | 8 | G 1/4A | 35 | 35 | 35 | 35 | 35 | 45 | 40 | 35 | 30 |
| | 10 | G 1/4A | 35 | 35 | 35 | 35 | 35 | 45 | 40 | 35 | |
| **EO L** | 12 | G 3/8A | 45 | 70 | 70 | 70 | 50 | 70 | 65 | 70 | 60 |
| **Triple-Lok®** | 15 | G 1/2A | 65 | 140 | 90 | 90 | 85 | 120 | 90 | 110 | 80 |
| | 18 | G 1/2A | 65 | 100 | 90 | 90 | 65 | 120 | 90 | 110 | |
| | 22 | G 3/4A | 90 | 180 | 180 | 180 | 140 | 230 | 125 | 180 | 140 |
| | 28 | G 1A | 150 | 330 | 310 | 310 | 190 | 320 | | 310 | 200 |
| | 35 | G 1 1/4A | 240 | 540 | 450 | 450 | 360 | 540 | | 450 | 400 |
| | 42 | G 1 1/2A | 290 | 630 | 540 | 540 | 540 | 700 | | 540 | 450 |
| | 6 | G 1/8A | | | | | | | | 25 | |
| | 6 | G 1/4A | 35 | 55 | 55 | | 45 | 45 | 40 | 55 | |
| | 8 | G 1/4A | 35 | 55 | 55 | | 45 | 45 | 40 | 55 | |
| | 10 | G 3/8A | 45 | 90 | 80 | | 60 | 70 | 65 | 90 | |
| | 12 | G 3/8A | 45 | 90 | 80 | | 60 | 70 | 65 | 90 | |
| **EO S** | 14 | G 1/2A | 65 | 150 | 115 | | 145 | 120 | 90 | 110 | |
| **O-Lok®** | 16 | G 1/2A | 65 | 130 | 115 | | 100 | 120 | 90 | 110 | |
| | 20 | G 3/4A | 90 | 270 | 180 | | 145 | 230 | 125 | 115 | |
| | 25 | G 1A | 150 | 340 | 310 | | 260 | 320 | | 420 | |
| | 30 | G 1 1/4A | 240 | 540 | 450 | | 360 | 540 | | 550 | |
| | 38 | G 1 1/2A | 290 | 700 | 540 | | 540 | 700 | | 600 | |

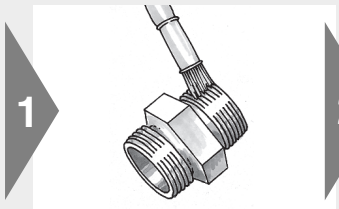
Tolerance of tightening torques listed in above table: +10%
Note: Lubricate stud with hydraulic oil before screwing in! Tightening torques relate to counterpart made of steel.

# Port connections



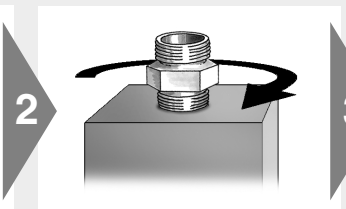
## Assembly of SAE straight port connections

- UN/UNF thread
  ISO 11926-2/3

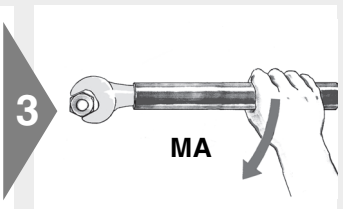



⚠ Threads of stainless steel fittings must be lubricated

- EO-NIROMONT is a special high-performance lubricant for stainless steel fittings




- Screw in until handtight



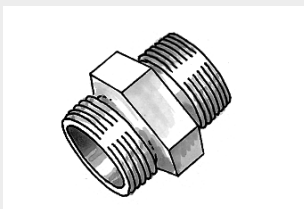

- Then tighten according to chart

**Assembly torques for UNF threads**

| Product | Thread size T ISO 11296 | Series EO / Triple-Lok® and O-Lok® | |
|---|---|---|---|
| | | Assembly torque non-adjustable end | Assembly torque adjustable end |
| Series | inch | Nm | Nm |
| | 7/16-20 UN(F) | 23 | 18 |
| | 1/2-20 UN(F) | 28 | 28 |
| | 9/16-18 UN(F) | 34 | 34 |
| **EO L** | 3/4-16 UN(F) | 60 | 55 |
| **Triple-Lok®** | 7/8-14 UN(F) | 115 | 80 |
| | 1.1/16-12 UN(F) | 140 | 100 |
| | 1.5/16-12 UN(F) | 210 | 150 |
| | 1.5/8-12 UN(F) | 290 | 290 |
| | 1.7/8-12 UN(F) | 325 | 325 |
| | 7/16-20 UN(F) | 20 | 20 |
| | 1/2-20 UN(F) | 40 | 40 |
| | 9/16-18 UN(F) | 46 | 46 |
| **EO S** | 3/4-16 UN(F) | 80 | 80 |
| **O-Lok®** | 7/8-14 UN(F) | 135 | 135 |
| | 1.1/16-12 UN(F) | 185 | 185 |
| | 1.5/16-12 UN(F) | 270 | 270 |
| | 1.5/8-12 UN(F) | 340 | 340 |
| | 1.7/8-12 UN(F) | 415 | 415 |

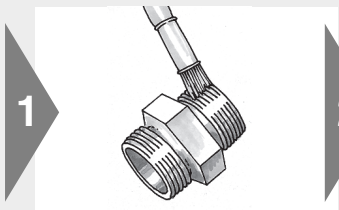
Tolerance of tightening torques listed in above table: + 10%
Note: Lubricate stud with hydraulic oil before screwing in!
Tightening torques relate to counterpart made of steel.

# Port connections

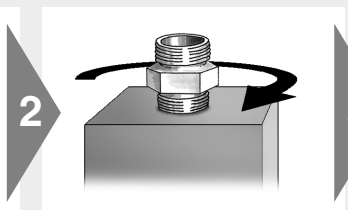


## Assembly of tapered thread port connections

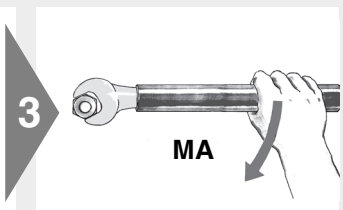
- NPT / NPTF thread
  ANSI / ASME B 1.20.1 - 1983



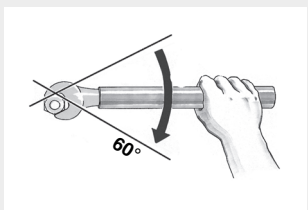

⚠ Threads of stainless steel fittings must be lubricated
- EO-NIROMONT is a special high-performance lubricant for stainless steel fittings




- Screw in until handtight




- Then tighten according to chart



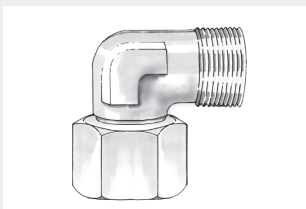

- one flat = 60°

**Tightening of NPT/NPTF thread**

| Size | Thread T NPT/F | Assembly TFFT Turns |
|---|---|---|
| 4 | 1/8-27 NPT/F | 2.0-3.0 |
| 6 | 1/4-18 NPT/F | 2.0-3.0 |
| 8 | 3/8-18 NPT/F | 2.0-3.0 |
| 10 | 1/2-14 NPT/F | 2.0-3.0 |
| 12 | 3/4-14 NPT/F | 2.0-3.0 |
| 16 | 1-11 1/2 NPT/F | 1.5-2.5 |
| 20 | 1 1/4-11 1/2 NPT/F | 1.5-2.5 |
| 24 | 1 1/2-11 1/2 NPT/F | 1.5-2.5 |

In the EO fitting range only **NPT** thread is manufactured.
In the **Triple-Lok® and O-Lok®** fitting range for **steel NPTF** threads are used, and **NPT** for stainless steel components.

## Triple-Lok® / O-Lok® swivels

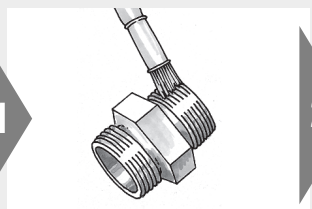


### Assembly of Triple-Lok® and O-Lok® swivel nut fittings

e.g.: Triple-Lok®: C6MX, V6MX, R6MX, S6MX, BBMTX
O-Lok®: C6MLO, V6MLO, S6MLO, R6MLO, A0EL6

- Final assembly of swivel nut fittings must be made in appropriate fittings

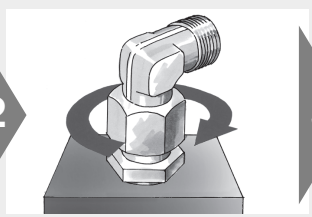
1



⚠ Threads of stainless steel fittings must be lubricated

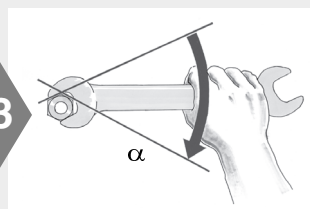
- EO-NIROMONT is a special high-performance lubricant for stainless steel fittings

2

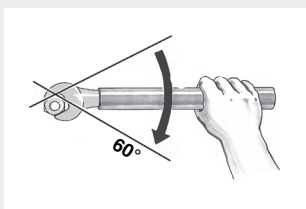


- Screw on nut by hand until handtight

3




- Then tighten according to chart




- one flat = 60°

**Assembly torques for O-Lok® and Triple-Lok® swivel nut fittings**

**O-Lok®**

| Size | Metric tube **mm** | Inch tube **inch** | Thread UN/UNF | Nm | FFWR |
|---|---|---|---|---|---|
| 4 | 6 | 1/4" | 9/16-18 | 25 | 1/2 |
| 6 | 8 | 5/16" | 11/16-16 | 40 | 1/2 |
| 6 | 10 | 5/16" | 11/16-16 | 55 | 1/2 |
| 8 | 12 | 1/2" | 13/16-16 | 80 | 1/2 |
| 10 | 14, 15,16 | 5/8" | 1-14 | 115 | 1/2 |
| 12 | 18, 20 | 3/4" | 1.3/16-12 | 130 | 1/2 |
| 16 | 22, 25 | 1" | 1.7/16-12 | 150 | 1/2 |
| 20 | 28, 30, 32 | 1.1/4" | 1.11/16-12 | 190 | 1/2 |
| 24 | 35, 38 | 1.1/2" | 2-12 | 245 | 1/2 |
| 32 | 50 | 2" | 2.1/2-12 | 490 | 1/2 |

**Triple-Lok®**

| Size | Metric tube **mm** | Inch tube **inch** | Thread UN/UNF | Nm | FFFT |
|---|---|---|---|---|---|
| 4 | 6 | 1/4" | 7/17-20 | 15 | 2 |
| 5 | 8 | 5/16" | 1/2-20 | 20 | 2 |
| 6 | 10 | 3/8" | 9/16-18 | 45 | 1.1/4 |
| 8 | 12 | 1/2" | 3/4-16 | 60 | 1 |
| 10 | 14, 15, **16** | 5/8" | 7/8-14 | 75 | 1 |
| 12 | 18, **20** | 3/4" | 1.1/16-12 | 100 | 1 |
| 16 | 22, **25** | 7/8" | 1.5/16-12 | 150 | 1 |
| 20 | **30**, 32 | 1.1/4" | 1.5/8-12 | 180 | 1 |
| 24 | 38 | 1.1/2" | 1.7/8-12 | 200 | 1 |
| 28 | 42 | | 2.1/4-12 | 220 | 1 |
| 32 | | 2" | 2.1/2-12 | 250 | 1 |

Assembly torques shown in chart are for **non-lubricated carbon steel zinc plated components.**
For stainless steel fittings, lubricate all mating surfaces and tighten to upper end of torque tolerance.
Recommended assembly torques are for connections consisting of all Parker manufactured components.

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