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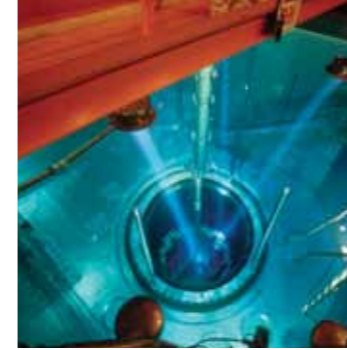
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## E0-Form

Metallically sealing fittings system  
for aggressive media and high temperatures



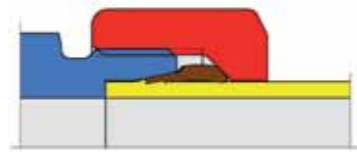
# Modular principle sets the standard

## Compatible with any application

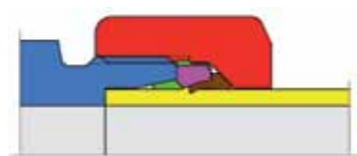
For many years EO fittings have been leading the market with their tightness and reliability through both soft and metallic sealing systems. The reasons for this success are not only the complete spectrum of applications from oil hydraulics through to gas and steam, but also the combination of fittings and worldwide availability. The four DIN systems are shown here schematically. The innovative metallic EO-Form allows cost-reducing applications in aggressive media and high temperatures.



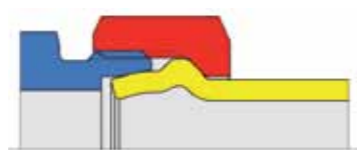
EO-Plus



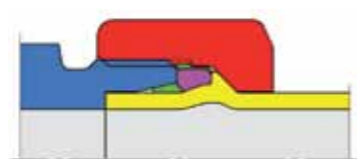
EO2-Plus



EO-Form



EO2-Form



# EO-Form on Top-Form

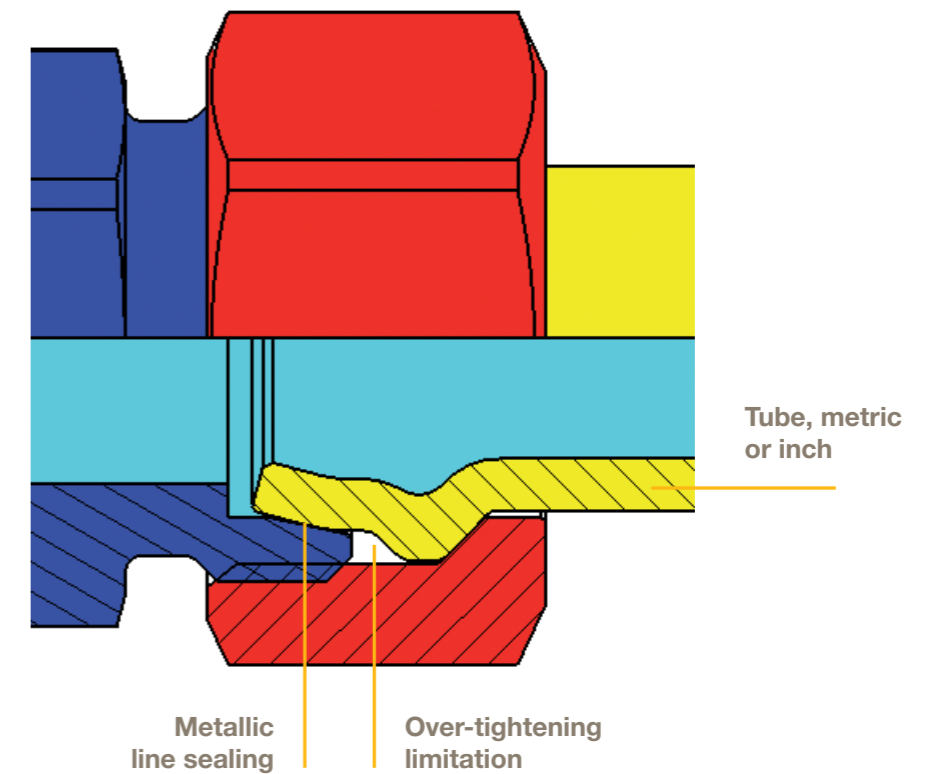
## The standard is fixed - But the design is free

Metallic EO-Form is the completion of the 24° fittings systems. The design in heat-resistant

steels is standard. Tubes with up to 42/42.4 mm outside diameters can be accommodated. It is the effective, safe solution in comparison with welding. Further-

more, EO-Form offers a new feature - the usage of both metric and inch tubes for 24° fittings is practicable as well as being absolutely new to the market.

An inch or metric tube is formed so that it will fit into a standard fittings body

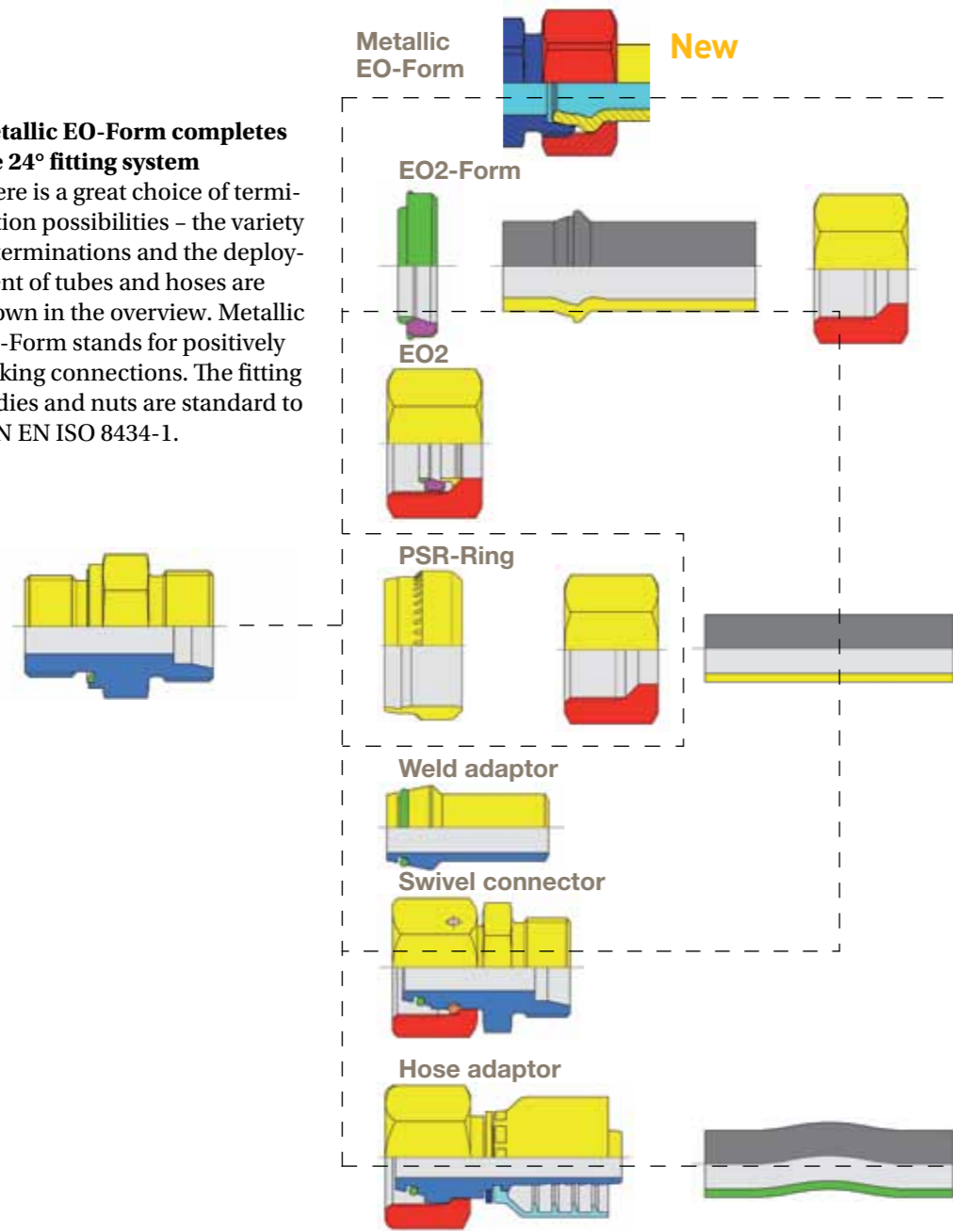


The building block principle



# System terminations

**Metallic EO-Form completes the 24° fitting system**  
 There is a great choice of termination possibilities - the variety of terminations and the deployment of tubes and hoses are shown in the overview. Metallic EO-Form stands for positively locking connections. The fitting bodies and nuts are standard to DIN EN ISO 8434-1.



# Solid safety

**The solution for aggressive media**  
 The use of metallic EO-Form brings out its safety features even in the harshest conditions.

Thanks to the tube forming process, a positively locking connection and line sealing are achieved. Because of this, tube tear-out (even when under-

assembled) is impossible and aggressive media have no influence on this leak-free, safe connector.

- **Easy to assemble**  
Low tightening torques
- **Highest vibration and pressure resistance**
- **Tear-out proof**
- **Welding no longer required**  
Cost reduction  
Time saving  
No expert personnel required
- **Fewer possibilities of error**
- **More convenient components**
- **Lower inventory**
- **Conforms to API 614**



# Inch tubes integrated into the metric domain

## Tubes to DIN 2448

Dimensions	Tube qualities
R13.5X2.3	ST37.4
R17.2X2.3	ST52.0
R21.3X3.2	15Mo3/16Mo3
R26.9X3.2	13CrMo44/13CrMo45
R33.7X3.2	boiler tube (various qualities)
R33.7X4.5	
R42.4X3.2	

■ In machine construction, boiler tube is the designation for a tube in a distillation or pressurised steam plant which carries a heated fluid (or its vapour) at up to boiling point or beyond, and must withstand a corresponding thermal and mechanical loading.

■ Boiler tubes are made typically from copper or steel – in the later case, hot-rolled, seamless or welded steel tubes are used nowadays.

### Tube specification – inch tube

Heat-resistant tube made from steel grades 15Mo3/16Mo3, 13CrMo44/13CrMo45 in accordance with DIN EN 10216-2 Opt. 1 Tab. 11 (cold manufactured, similar to the old DIN 2448)



# For media, markets and applications

**Worldwide service guaranteed**  
Parker Hannifin guarantees total supply and consistent quality in fittings technology. Metallic EO-Form provides optimum connec-

tions - not only in the 24° fittings building block system, but also both metric and inch tubes. This gives a wide field of applications and sets the requirements high.

The ideal connection for aggressive media and high temperatures.



### Media

- gas
- steam
- hydraulic oil

### Markets

- power generation
- oil and gas
- offshore
- industry

### Applications

- pressurised oil lines
- steam lines
- supply lines
- control lines
- gas lines

# The E02-Form WorkCenter F3

**Profitability in great form**  
This machine works independently from welding and is self-sufficient in production. It offers many features but, above all, simple operation, tool changing, operating method and manoeuvrability.



The E02-Form WorkCenter F3 is fully automatic in operation. The forming process requires only one third of the production operations needed for welding. So connections are made easily, quickly and safely.



**Machine tube forming**  
On an inch tube – e.g. 26.9 x 3.2 – a metallic sealing head for metric 28-L fittings is formed

Size summary
21.3 x 3.2 tube with fittings series 22-L
26.9 x 3.2 tube with fittings series 28-L
33.7 x 3.2 tube with fittings series 35-L

#### Order codes

##### Clamping dies:

MF3EO221.3

MF3EO226.9

MF3EO233.7

##### Forming pins:

BF3EOM21.3X3.2S

BF3EOM26.9X3.2S

BF3EOM33.7X3.2S



#### E02-Form WorkCenter F3 – performance features

##### E02-Form

- tube o.d. 6 – 42 mm
- steel and 1.4571

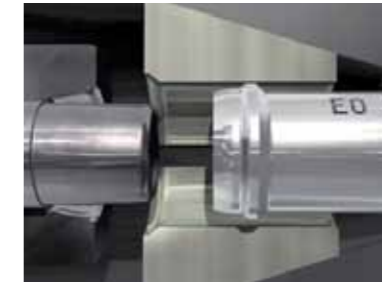
##### Additional EO-Form

- 13.5 – 42.4 mm
- cycle time: 15 – 20 sec. approx.
- heat-resistant steels
- 300 kg, mobile
- comfortably moveable by one person thanks to roller wheels and railing
- crane fixings provided
- adaptor for hand lift and fork lift trucks

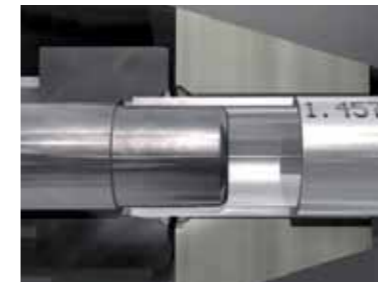
# The EO-Form process



1. Tube end is prepared and equipped with EO-nut



2. Tube is inserted into the tools until it firmly touches the stop at the end



3. The tool shape defines the outer contour of the formed tube wall



The EO-nut is used for assembling the connector



All the tools required for forming are integrated in the machine. Thanks to automatic tool recognition, the operator has only to press the start button and after about 15 seconds the tube has been formed into the corresponding shape. Subsequently, the tube connector can be immediately assembled.



# Pre-assembly



Tube forming with EO2-Form WorkCenter F3

- Reliable forming method
- Reliable process

**1**

- Change tool only when drive switched off (button OFF)
- Obey safety instructions
- Do not operate machine without tooling

**2**

- Open doors to access tools and handling devices
- Tool handling devices are stored in middle on top

**3**

- Select suitable forming pin according to tube material, outer diameter and wall thickness

**4**

- Check forming pin for dirt, wear and damage

**5**

- Use magnetic holder to insert forming pin
- Turn clockwise to lock bayonet fixture

**6**

- Tilt magnetic holder to remove handle

**7**

- Select suitable clamping die set according to tube outer diameter
- Keep stainless tube clamping dies separate from other tube materials to prevent contact corrosion

**8**

- Check clamping dies for dirt, wear and damage

**9**

- Use pistol to handle clamping die set
- Pull and hold handle to grab die set

**10**

- Insert clamping die set until it bottoms up (twist pistol for easy insertion)
- Release handle to fix die set
- Never operate machine while pistol is inserted

**11**

- Front surfaces must be completely flat
- Die segments must fit without gaps

**12**

- Switch on drive (button ON)
- Each time the drive is switched on, the reset button (RESET) must be prepared first
- The automatic tool recognition is initiated
- Clamping dies will close, reset button (RESET) must be held until it lights up
- Lighten of reset button (RESET) indicates "ready to start"

**13**

- Make sure tube-end is free of burrs, chips and dirt
- Lubricate inside and outside of tube-end
- Use LUBSS for best performance

**14**

- Insert tube-end with nut into open tool until it firmly touches the stop at the end
- Press tube-end firmly into the tube stop
- Do not turn tube-end anti-clockwise to prevent unlocking forming-pin

**15**

- Press and hold start button (START) until tube is clamped
- Instead of start-button (START), footswitch can be used
- Hold tube firmly until clamping dies are closed
- Use support for long tubes
- Do not reach into tool area while machine is working

**16**

- Tube can be taken out after the clamping dies are open
- Reset button (RESET) lights up and the machine is ready for the next operation
- Check tools regularly (approx. 50 assemblies) for dirt and wear
- Remove tools for cleaning
- Clean clamping dies with wire brush
- Clean forming die using compressed air
- Replace worn-out tooling

# Final-assembly

- Tube must fit without tension

**1**

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

**2**

- Tube must fit without tension
- Assemble fitting until wrench-tight (without spanner extension)

**3**

- Then tighten fitting firmly by 1/6 turn (1 flat)
- Recommended to use spanner extension for sizes over 20 mm outside diameter
- Incorrect assembly reduces performance and reliability of the connection

