

# PrimeLock® Fittings

*A premium PFA fitting for high-purity and corrosive chemical applications*

Entegris has supplied innovative connection technology into the high-purity chemical handling markets for over 30 years. Our PrimeLock® fittings (available in sizes from ¼" to 1½" and 40 mm) are clean, robust and very easy to assemble. With audible and visual indicators, users can quickly verify the proper makeup of the connection. Heat is not required to assemble this fitting, saving time and money.

PrimeLock fittings perform effectively in the most demanding chemical applications at both ambient and elevated temperatures. The ultraclean design provides enhanced reliability within your system, with an all-PFA wetted construction. PrimeLock fittings are fully tested using Entegris' stringent testing and qualification methodology. This extremely robust, clean fitting is the most reliable connection technology on the market.



*Now available in sizes up to 40 mm*

## APPLICATIONS

- High-purity, corrosive chemical handling
- Solar, LED, flat panel display
- Excellent performance with low surface tension chemistries
- Semiconductor applications
  - Photolithography
  - Bulk chemical delivery
  - CMP
  - Wet etch and clean
  - High-temperature cleaning processes

## FEATURES & BENEFITS

<b>Ease of assembly</b>	Consistent and repeatable fitting makeup
<b>All wetted components are PFA</b>	Broad chemical compatibility
<b>Robust thread design</b>	No cross-threading, quick makeup, increased sealing force
<b>Unique seal design</b>	Nonwetted insert reduces entrapment, leak points and flow interruptions
<b>No heat required to flare tubing</b>	Saves time and money; reduces operator variability
<b>Connection verification ring</b>	Audible and visual indication of proper fitting makeup
<b>Capable of elevated temperature ratings, all sizes</b>	Simplifies product selection Compatible with high-temperature chemical processes
<b>Dual-wrench design for 1½" or 40 mm nuts</b>	Innovative design makes it easier to assemble fittings, saving time and money

## SPECIFICATIONS

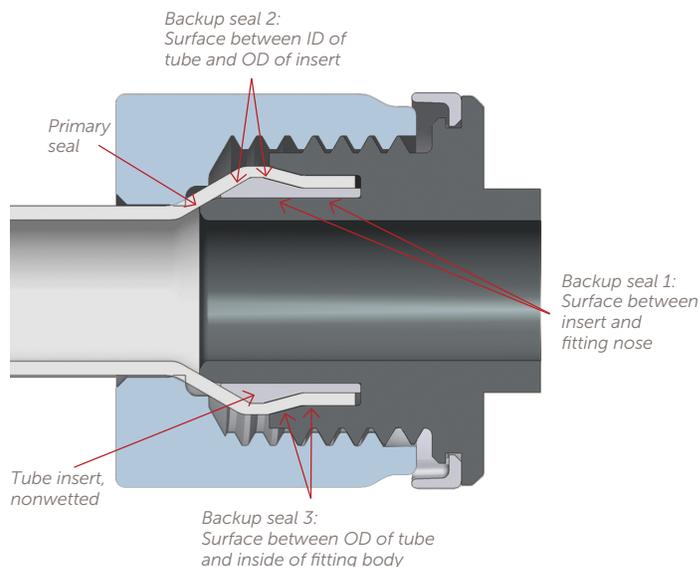
		¼" – 1¼" SIZES	1½" AND 40 MM SIZES
<b>Materials</b>	Body, insert, nut	PFA	
	Connection verification ring	ETFE	
<b>Operating conditions</b>	Media pressure	@ 21°C (70°F) 827 kPa (120 psig)	@ 21°C (70°F) 689 kPa (100 psig)
		@ 200°C (392°F) 276 kPa (40 psig)*	@ 150°C (302°F) 276 kPa (40 psig)
	Temperature range (fluid)	-18° to 200°C (0° to 392°F)	-18° to 150°C (0° to 302°F)
<b>Compliant</b>		RoHS	

\*For 1¼" PrimeLock "SpaceSaver" connections, @ 100°C (212°F) 586 kPa (85 psig)

### Applicable PFA tube dimensions

Size	Outside diameter	Outside diameter tolerance	Wall thickness	Wall thickness tolerance
¼"	6.35 mm (0.250")	±0.10 mm (±0.004")	1.19 mm (0.047")	±0.10 mm (±0.004")
⅜"	9.52 mm (0.375")	±0.10 mm (±0.004")	1.57 mm (0.062")	±0.13 mm (±0.005")
½"	12.70 mm (0.500")	±0.13 mm (±0.005")	1.57 mm (0.062")	±0.13 mm (±0.005")
¾"	19.05 mm (0.750")	±0.13 mm (±0.005")	1.57 mm (0.062")	±0.13 mm (±0.005")
1"	25.40 mm (1.000")	±0.13 mm (±0.005")	1.57 mm (0.062")	±0.13 mm (±0.005")
1¼"	31.75 mm (1.250")	±0.18 mm (±0.007")	1.90 mm (0.075")	±0.18 mm (±0.007")
1½"	38.10 mm (1.500")	±0.18 mm (±0.007")	2.18 mm (0.086")	±0.18 mm (±0.007")
40 mm	40 mm	±0.18 mm (±0.007")	2.18 mm (0.086")	±0.18 mm (±0.007")

### PRIMELOCK CROSS-SECTION: THREE BACKUP SEALS

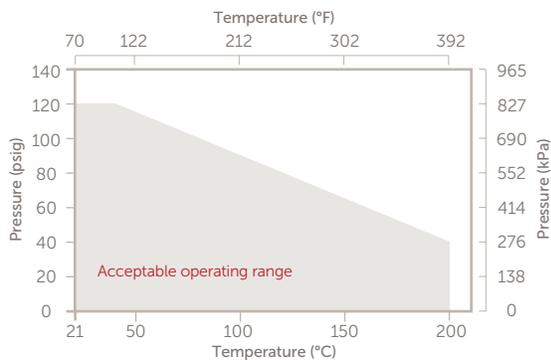


## FITTINGS RELIABILITY TEST RESULTS

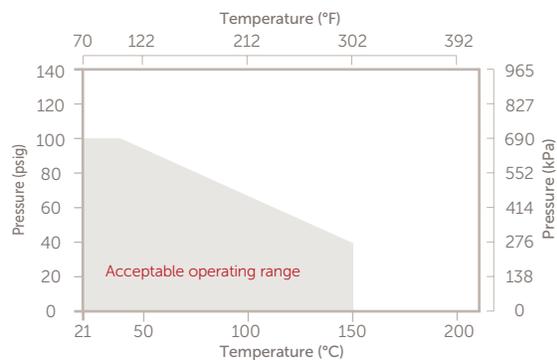
TEST TYPE	TEST CONDITIONS	ACCEPTANCE CRITERIA	RESULTS	
<b>Burst pressure</b>	Media pressure increased until leak occurs	No external leakage prior to tube rupturing	PASS No external leakage	
<b>Cyclic pressure leak test</b>	¼" – 1¼": 1241 kPa (180 psig) water @ 23°C (73°F)	No external leakage after 1 million cycles @ 1.5 x rated pressure	PASS No external leakage	
	1½" and 40 mm: 1034 kPa (150 psig) water @ 23°C (73°F)			
	¼" – 1¼": 414 kPa (60 psig) hydraulic oil @ 200°C (392°F)	No external leakage after 1 million cycles @ 1.5 x rated pressure	PASS No external leakage	
	1½" and 40 mm: 414 kPa (60 psig) hydraulic oil @ 150°C (302°F)			
<b>High pressure leak test</b>	Submerge fitting	No external leakage allowed	PASS No external leakage	
	Apply nitrogen pressure equaling 80% of the tube burst pressure			
<b>Tube pull out test</b>	Apply tensile load to tube/fitting until tube separates from fitting	¼"	(178 N) 40 lbf	PASS
		⅜"	(400 N) 90 lbf	
		½"	(534 N) 120 lbf	
		¾"	(890 N) 200 lbf	
		1"	(1112 N) 250 lbf	
		1¼"	(1557 N) 350 lbf	
		1½" and 40 mm	(1779 N) 400 lbf	
<b>Chemical testing</b>	Sulfuric acid	No external leakage after 10 million cycles	PASS	
	Fluorosurfactant	No external leakage after 8.9 million cycles		
	Copper sulfate	No external leakage after 9 million cycles		
	25% TMAH	No external leakage after 2 million cycles		

## PERFORMANCE DATA

PrimeLock Fittings Sizes ¼" – 1¼"\*  
Pressure vs. Temperature Rating



PrimeLock Fitting Sizes 1½" and 40 mm  
Pressure vs. Temperature Rating



\*1¼" PrimeLock "SpaceSaver" connections are rated to 586 kPa (85 psig) @ 100°C (212°F)

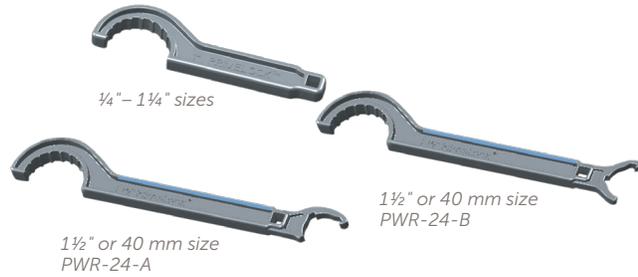
Note: Consult factory for applications outside these pressure ranges.

## INSERT INSTALLATION TOOLS

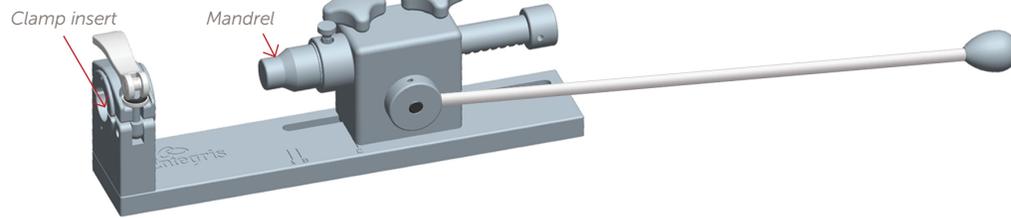
### Handheld Insertion Tool



### PrimeLock Polymer Nut Wrenches



### Bench Top Insertion Tool



### PrimeLock Aluminum Nut Wrenches, Short Handle



### PrimeLock Aluminum Nut Wrenches, Long Handle



## ORDERING INFORMATION

### Tools and kits

Part number	Tool	Description
PHND-TOOL-2	Handheld insertion tool, 1/4" – 1" sizes	Tool only, requires mandrel kit and clamp insert kit
PHND-TOOL-L2	Handheld insertion tool, 1 1/4", 1 1/2", and 40 mm sizes	Tool only, components sold separately
PBNCH-TOOL-2	Bench top insertion tool, 1/4" – 1" sizes	Tool only, requires mandrel kit and clamp insert kit
PBNCH-TOOL-L2	Bench top insertion tool, 1 1/4", 1 1/2", and 40 mm sizes	Tool only, components sold separately
PMND-KIT-N	Mandrel kit**	Holds the insert in place during installation 1/4", 3/8", 1/2", 3/4", 1"
PCLMP-KIT	Clamp insert kit**	Holds the tube in place during installation 1/4", 3/8", 1/2", 3/4", 1"
PCLMP-R-KIT	Clamp insert kit** – EPDM-lined	1/4" – 1"
PHMND-KIT	Hot-air mandrel kit***	1/2", 3/4", 1"
PMTMND-KIT	Minimum tube union mandrel kit**	Allows fabrication of minimum length tube unions 1/4", 3/8", 1/2", 3/4", 1"
PWR-KIT	PrimeLock nut wrench kit	1/4", 3/8", 1/2", 3/4", 1", 1 1/4" wrenches
PWR-24-SET	PrimeLock nut wrench kit*	1 1/2" or 40 mm wrenches (includes PWR-24-A and PWR-24-B)
01-1015292	Component case	Organizes mandrels, clamp inserts and wrenches in individual compartments, 1/4" – 1" size only

\*Two PWR-24-A or PWR-24-B or combination thereof are required to assemble 1 1/2" or 40 mm size fittings.

\*\*Kit does not include 1 1/4", 1 1/2", or 40 mm sizes; part numbers sold separately.

\*\*\*Inserts can be installed using a mandrel and a hot air gun when space restrictions prevent the use of handheld and bench top insertion tools.

## ORDERING INFORMATION (CONTINUED)

### Individual tool components

Part number	Tool	Size
PMND-4-P	Mandrel	1/4"
PMND-6-N	Mandrel	3/8"
PMND-8-N	Mandrel	1/2"
PMND-12-N	Mandrel	3/4"
PMND-16-N	Mandrel	1"
PMND-20-N	Mandrel	1 1/4"
PMND-24-N	Mandrel	1 1/2" or 40 mm
PMTMND-4	Minimum tube union mandrel	1/4"
PMTMND-6	Minimum tube union mandrel	3/8"
PMTMND-8	Minimum tube union mandrel	1/2"
PMTMND-12	Minimum tube union mandrel	3/4"
PMTMND-16	Minimum tube union mandrel	1"
PMTMND-20	Minimum tube union mandrel	1 1/4"
PMTMND-24	Minimum tube union mandrel	1 1/2" or 40 mm
PCLMP-6	Clamp insert	3/8"
PCLMP-8	Clamp insert	1/2"
PCLMP-12	Clamp insert	3/4"
PCLMP-16	Clamp insert	1"
PCLMP-20	Clamp insert	1 1/4"
PCLMP-24	Clamp insert	1 1/2"
PCLMP-M40	Clamp insert	40 mm
PCLMP-4-R	Clamp insert – EPDM lined*	1/4"
PCLMP-6-R	Clamp insert – EPDM lined*	3/8"
PCLMP-8-R	Clamp insert – EPDM lined*	1/2"
PCLMP-12-R	Clamp insert – EPDM lined*	3/4"
PCLMP-16-R	Clamp insert – EPDM lined*	1"
PCLMP-20-R	Clamp insert – EPDM lined*	1 1/4"
PCLMP-24-R	Clamp insert – EPDM lined*	1 1/2"
PCLMP-M40-R	Clamp insert – EPDM lined*	40 mm
PHMND-8	Hot-air mandrel	1/2"
PHMND-12	Hot-air mandrel	3/4"
PHMND-16	Hot-air mandrel	1"

Part number	Tool	Size
<b>LONG HANDLE WRENCHES</b>		
PWR-4	Wrench, polymer	1/4"
PWR-6	Wrench, polymer	3/8"
PWR-8	Wrench, polymer	1/2"
PWR-12	Wrench, polymer	3/4"
PWR-16	Wrench, polymer	1"
PWR-20	Wrench, polymer	1 1/4"
PWR-24-A	Wrench, polymer**	1 1/2" or 40 mm
PWR-24-B	Wrench, polymer**	1 1/2" or 40 mm
PWRA-4	Wrench, aluminum	1/4"
PWRA-6	Wrench, aluminum	3/8"
PWRA-8	Wrench, aluminum	1/2"
PWRA-12-A	Wrench, aluminum	3/4"
PWRA-12-B	Wrench, aluminum, 45°	3/4"
PWRA-16-A	Wrench, aluminum	1"
PWRA-16-B	Wrench, aluminum, 45°	1"
PWRA-20-A	Wrench, aluminum	1 1/4"
PWRA-20-B	Wrench, aluminum, 45°	1 1/4"
PWRA-24-A	Wrench, aluminum	1 1/2" or 40 mm
PWRA-24-C	Wrench, aluminum, body	1 1/2" or 40 mm

### SHORT HANDLE WRENCHES

01-1015676	Wrench, aluminum	1/4"
01-1015677	Wrench, aluminum	3/8"
01-1015678	Wrench, aluminum	1/2"
01-1015679	Wrench, aluminum	3/4"
01-1015680	Wrench, aluminum	1"
01-1021582	Wrench, aluminum	1 1/4"
01-1033873	Wrench, aluminum	1 1/2" or 40 mm
01-1033876	Wrench, aluminum, body	1 1/2" or 40 mm

## ORDERING INFORMATION (CONTINUED)

### PFA inserts

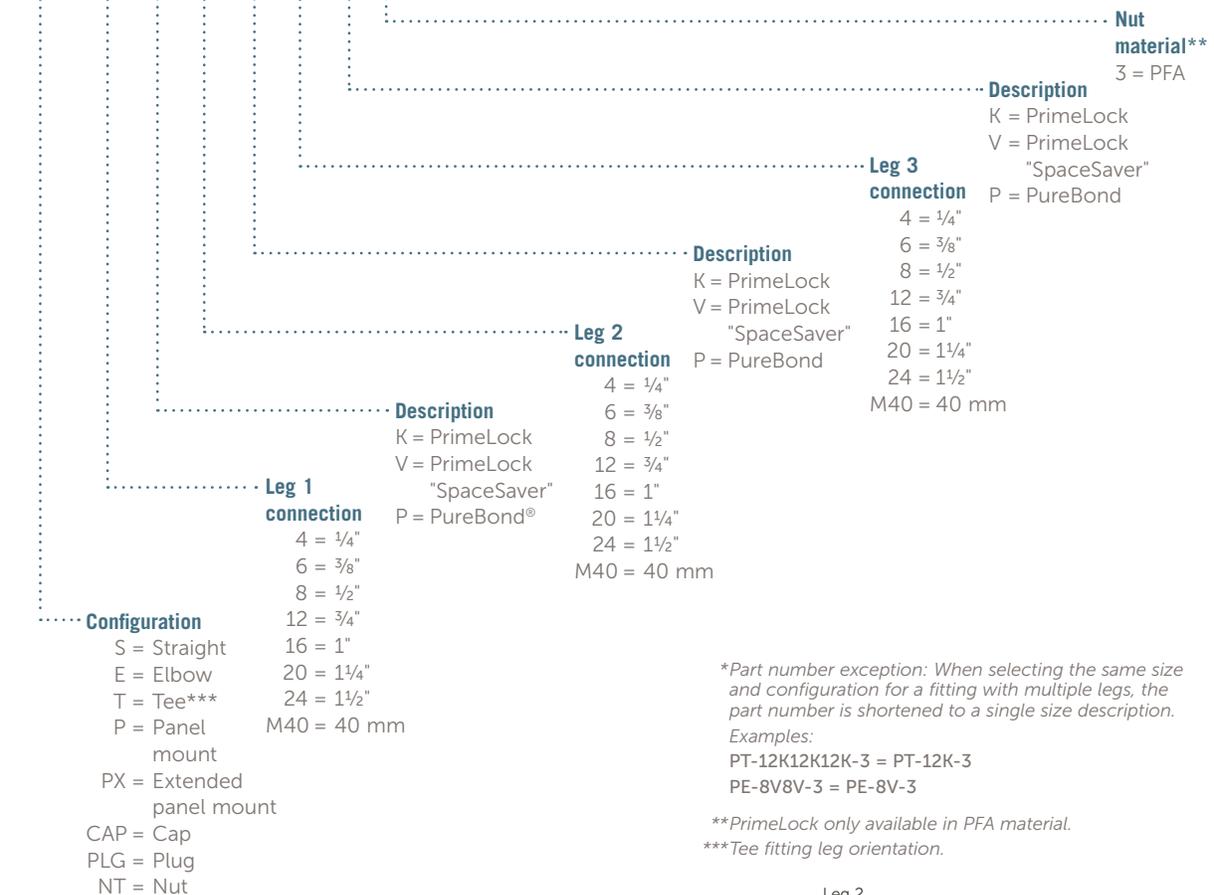
Part number (10 per pack)	Size
PINS-4-SET10	1/4"
PINS-6-SET10	3/8"
PINS-8-SET10	1/2"
PINS-12-SET10	3/4"
PINS-16-SET10	1"
PINS-20-SET10	1 1/4"
PINS-24-SET10	1 1/2" or 40 mm

\*Eliminates clamp marks on tubing.

\*\*Two PWR-24-A or PWR-24-B or combination thereof are required to assemble 1 1/2" or 40 mm size fittings.

### PrimeLock Fittings: part number\*

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#### FOR MORE INFORMATION

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