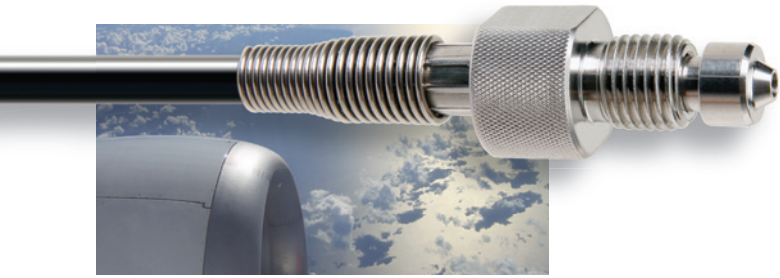


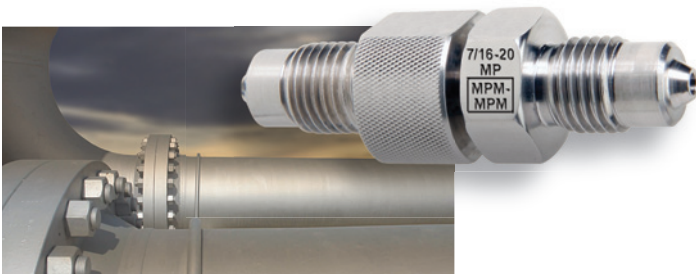
CRYSTAL
engineering corporation



Crystal Pressure Fittings™



Fast, Safe
Leak Free
Connections



www.crystalengineering.net

Crystal Engineering's Revolutionary CPF System

Patent Pending

Key Features and Benefits

■ ■ ■ **Introducing a revolutionary fitting system for fast, safe, and leak free connections.** When CPF fittings are connected together, no tools are required—only your fingers—for working pressure up to 10 000 PSI/700 bar/70 MPa. If you need a metal to metal seal (for media compatibility), just use a wrench! ■ Unlike other proprietary fitting systems, CPF can be used with standard, off-the-shelf medium pressure fittings from Autoclave, HiP and others - without the need for special conversion fittings.

Fittings

- Finger-tight up to a working pressure of 10 000 PSI/700 bar/70 MPa (-20°C to 50°C).
- Wrench-tight up to a working pressure of 10 000 PSI/700 bar/70 MPa (-40°C to 150°C).
- Crystal's innovative interchangeable design allows wrench tight coupling to a working pressure of 10 000 PSI/700 bar/70 MPa with HiP* and Autoclave Engineers† medium pressure (1/4") series fittings and adapters.
- Laser marked for clear fitting identification.
- Safety weep hole alerts you of a pressurized connection (a whistling noise or seeping of hydraulic fluid indicate that some manner of pressure still exists within the fitting).
- Cannot be mistaken for NPT.

* HiP is High Pressure Equipment Company.

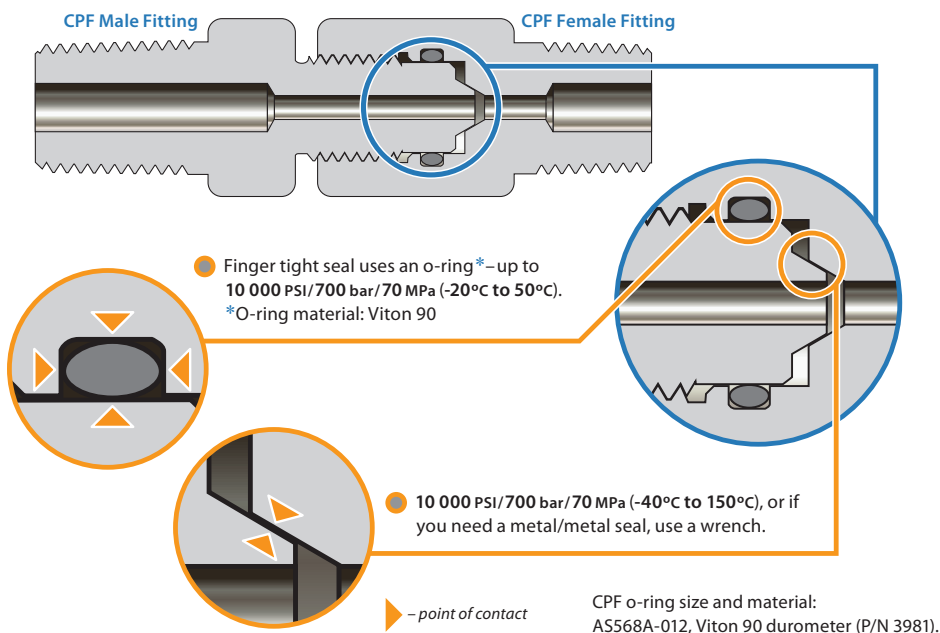
† Autoclave Engineers Fluid Components is a division of Snap-tite, Inc.

Hoses

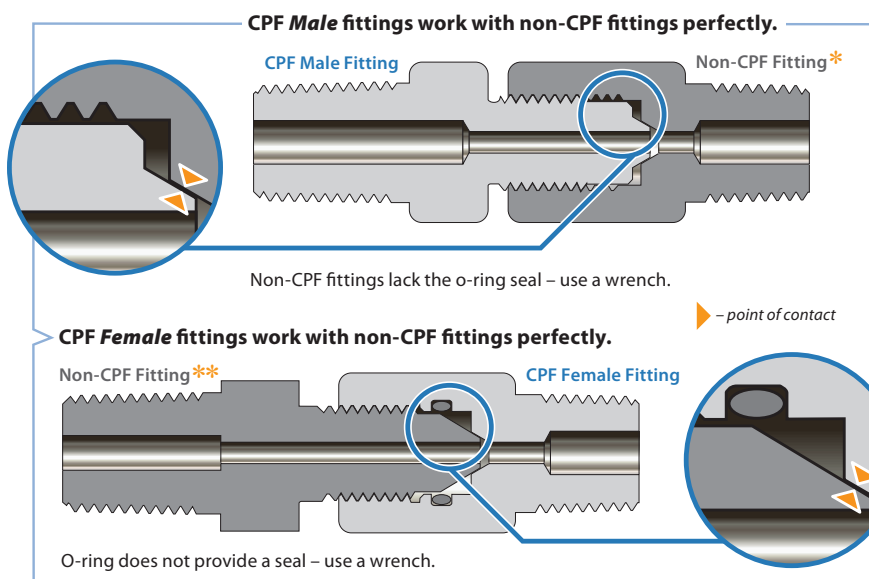
- Factor Of Safety (FOS) on 10 000 PSI/700 bar/70 MPa working pressure system is over 4:1 versus competitors FOS of 2.5:1.
- Quality construction using 316 Stainless Steel fittings on Polyamide core hose.
- Suitable for hydraulic and pneumatic applications.
- Flexible hose construction (minimum bend radius: 1.0" [25mm]).
- 0.08" (2mm) minimum internal diameter.
- Purpose-designed for calibration.
- Hose temperature rating is -40°C to 150°C.

■ **CRYSTAL Engineering's CPF System is engineered and designed in the USA.**

CPF fittings work to create a hand-tight 10 000 PSI/700 bar/70 MPa seal!



Non-CPF fittings



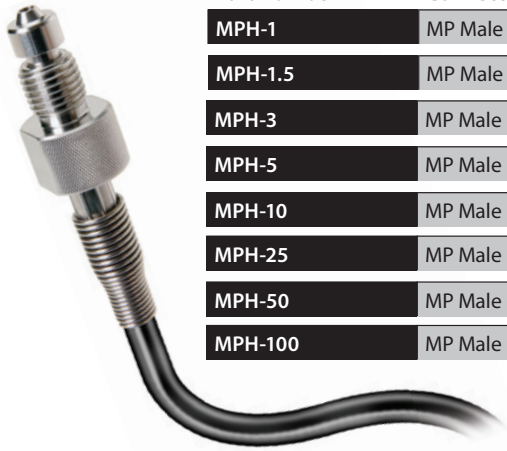
* HiP: 1/4" Female Medium Pressure (LF4 series) ■ Autoclave Engr: 1/4" Female Medium Pressure (SF250CX female series)

** HiP: 1/4" Male Medium Pressure (LM4 series) ■ Autoclave Engr: 1/4" Male Medium Pressure (SF250CX male series)

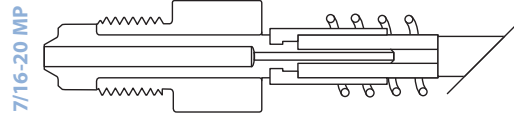
Finger-tight to a working pressure of 10 000 PSI/700 bar/70 MPa (-20°C to 50°C) Wrench-tight to a working pressure of 10 000 PSI/700 bar/70 MPa (-40°C to 150°C)

Male – Male Hose System

Finger-tight to 10 000 PSI/700 bar/70 MPa (-20°C to 50°C)



Part Number	Connector Type	Special Attributes
MPH-1	MP Male	1 meter (3 ft.) 10 000 PSI working pressure
MPH-1.5	MP Male	1.5 meters (5 ft.) 10 000 PSI working pressure
MPH-3	MP Male	3 meters (10 ft.) 10 000 PSI working pressure
MPH-5	MP Male	5 meters (16 ft.) 10 000 PSI working pressure
MPH-10	MP Male	10 meters (33 ft.) 10 000 PSI working pressure
MPH-25	MP Male	25 meters (82 ft.) 10 000 PSI working pressure
MPH-50	MP Male	50 meters (164 ft.) 10 000 PSI working pressure
MPH-100	MP Male	100 meters (328 ft.) 10 000 PSI working pressure

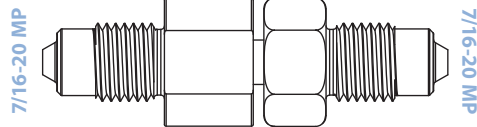


Male – Male CPF to CPF Adapter

Finger-tight to 10 000 PSI/700 bar/70 MPa (-20°C to 50°C)



Part Number	Connector Type	Special Attributes
MPM-MPM	MP Male	Hose substitution; self supporting fitting for nVision

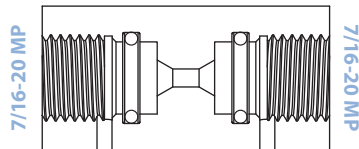


Female - Female CPF to CPF Adapter

Finger-tight to 10 000 PSI/700 bar/70 MPa (-20°C to 50°C)



Part Number	Connector Type	Special Attributes
MPF-MPF	MP Female	Ideal for connecting two hoses or MPM (male CPF) fittings

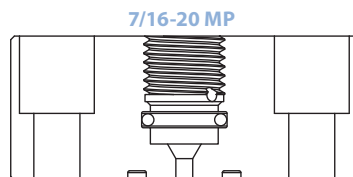


GaugeCalXP Adapter Plate

Finger-tight to 10 000 PSI/700 bar/70 MPa (-20°C to 50°C)



Part Number	Connector Type	Special Attributes
MPF-GC	GaugeCalXP	Convert GaugeCalXP to CPF system



CPF Fittings: Finger-tight to 10000 PSI

Finger-tight to a working pressure of 10 000 PSI/700 bar/70 MPa (-20°C to 50°C) Wrench-tight to a working pressure of 10 000 PSI/700 bar/70 MPa (-40°C to 150°C)

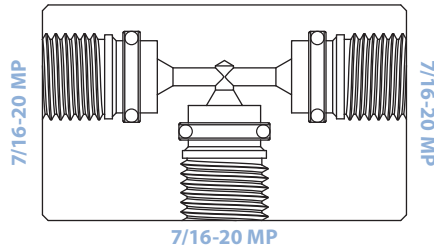
Female Tee Union

Finger-tight to 10 000 PSI/700 bar/70 MPa (-20°C to 50°C)

Part Number	Connector Type	Special Attributes
MPF-MPFTU	MP Female	Connect multiple MPM (male CPF) fittings



3/4"
19mm



Female - Female Bulkhead Mount

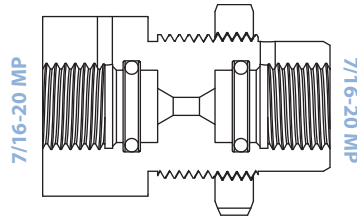
Finger-tight to 10 000 PSI/700 bar/70 MPa (-20°C to 50°C)

Part Number	Connector Type	Special Attributes
MPF-MPFBULK	MP Female	Bulkhead mount the CPF fitting system. Works with Swagelok Bulkhead Retainers if counter rotation needed. 20mm thru hole required.



15/16"
24mm

1"
26mm



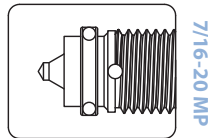
Cap

Finger-tight to 10 000 PSI/700 bar/70 MPa (-20°C to 50°C)

Part Number	Connector Type	Special Attributes
MPF-CAP	Cap	Ideal for capping hoses and MPM (male CPF) fittings



5/8"
16mm



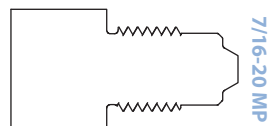
Male Plug

Finger-tight to 10 000 PSI/700 bar/70 MPa (-20°C to 50°C)

Part Number	Connector Type	Special Attributes
MPM-PLUG	MP Male Plug	Plug any MPF (female CPF) fitting



5/8"
16mm



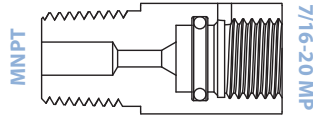
CPF Side finger-tight to a working pressure of 10 000 PSI/700 bar/70 MPa (-20°C to 50°C) NPT/BSP Side wrench-tight to a working pressure of 10 000 PSI/700 bar/70MPa (-40°C to 150°C)

Female-Male CPF to NPT

Wrench-tight to 10000 PSI/700 bar/70 MPa (-40°C to 150°C)



Part Number	Connector Type	Special Attributes
MPF-1/8MPT	1/8" MNPT	Connect quickly to 30 Series & ComboPump products
MPF-1/4MPT	1/4" MNPT	Connect quickly with Transmitters, GaugeCalXP (NPT), and HydraulicPump products

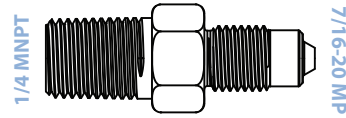


Male-Male CPF to NPT

Wrench-tight to 10000 PSI/700 bar/70 MPa (-40°C to 150°C)



Part Number	Connector Type	Special Attributes
MPM-1/4MPT	1/4" MNPT	Connect your nVision to a GaugeCalXP (NPT)

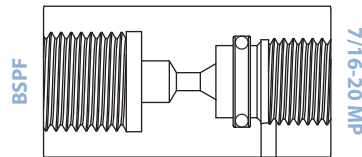


Female - Female CPF to BSP Adapters

Wrench-tight to 10000 PSI/700 bar/70 MPa (-40°C to 150°C)



Part Number	Connector Type	*Wrench Size	Special Attributes
MPF-1/8BSPF	G 1/8	20mm Hex	Designed to conform to EN 837-1 and utilizes parallel threads per ISO 228
MPF-1/4BSPF	G 1/4	20mm Hex	
MPF-3/8BSPF	G 3/8	25mm Hex	
MPF-1/2BSPF	G 1/2	30mm Hex	

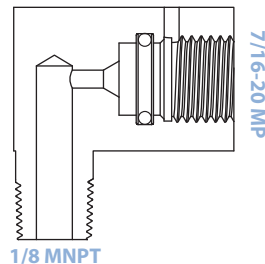


ComboPump 90° CPF to NPT Adapter

Wrench-tight to 10000 PSI/700 bar/70 MPa (-40°C to 150°C)



Part Number	Connector Type	Special Attributes
MPF-1/8MPT90	1/8" MNPT	Use this for easier connections in tight spaces such as on the ComboPump

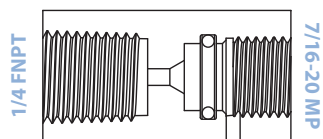


Female- Female CPF to NPT

Wrench-tight to 10000 PSI/700 bar/70 MPa (-40°C to 150°C)



Part Number	Connector Type	Special Attributes
MPF-1/4FPT	1/4" FNPT	Connect with M1, XP2i Series products



Quick Test Fittings: Finger-tight to 5 000 PSI

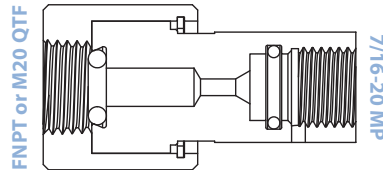
Finger-tight to a working pressure of 5 000 PSI/350 bar/35 MPa (-20°C to 50°C)

Quick Test Female (to interface with Male NPT fittings)



5/8"
16mm

Part Number	Connector Type	Special Attributes
MPF-1/8QTF	1/8" FNPT QT	Finger-tight to 10 000 PSI/700 bar/70 MPa (-20°C to 50°C)
MPF-1/4QTF	1/4" FNPT QT	Finger-tight to 10 000 PSI/700 bar/70 MPa (-20°C to 50°C)
MPF-1/2QTF	1/2" FNPT QT	Finger-tight to 5 000 PSI/350 bar/35 MPa (-20°C to 50°C)
MPF-M20QTF	M20X1.5 QT Female	Finger-tight to 5 000 PSI/350 bar/35 MPa (-20°C to 50°C)



Quick Test NPT Kit Quickly connect to an array of NPT fittings

Part Number

4013

Kit contains: [MPF-1/8QTF](#) (Qty 1), [MPF-1/4QTF](#) (Qty 1), [MPF-1/2QTF](#) (Qty 1)

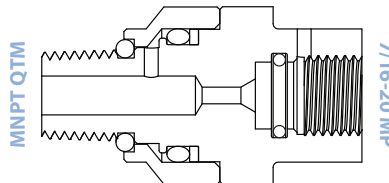
Quick Test Male (to interface with Female NPT)

Finger-tight to 10 000 PSI/700 bar/70 MPa (-20°C to 50°C)



See
Table*

Part Number	Connector Type	*Wrench Size	Special Attributes
MPF-1/8QTM	1/8" MNPT QT	5/8" (16mm)	Connect to 30 Series & ComboPump products
MPF-1/4QTM	1/4" MNPT QT	3/4" (19mm)	Connect with Transmitters, GaugeCalXP (NPT), and HydraulicPump products



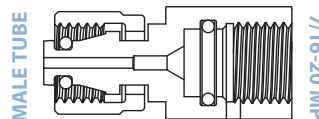
Tube Adapters

Finger-tight to 5 000 PSI/350 bar/35 MPa (-20°C to 50°C)



5/8"
16mm

Part Number	Connector Type	Special Attributes
MPF-1/4TBM	1/4" M Tube	CPF for Swagelok*-type tube systems
MPF-3/8TBM	3/8" M Tube	CPF for Swagelok*-type tube systems
MPF-1/2TBM	1/2" M Tube	CPF for Swagelok*-type tube systems



* Swagelok is a registered trademark of the Swagelok Company

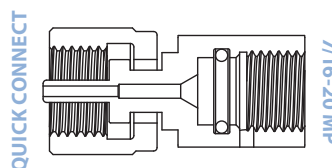
Quick Connect Adapter

Finger-tight to 5 000 PSI/350 bar/35 MPa (-20°C to 50°C)



5/8"
16mm

Part Number	Connector Type	Special Attributes
MPF-QCN	Quick Connect Nut	Connect quickly to Quick Connect threaded fittings



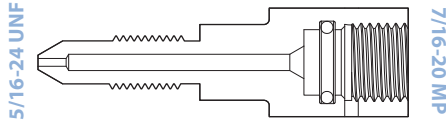
Transmitter Bleed Valve Adapter (5/16"-24 UNF)

Wrench-tight to 5 000 PSI/350 bar/35 MPa (-20°C to 50°C)

Part Number	Connector Type	Special Attributes
MPF-5/16TRM	5/16"-24 UNF Transmitter Male	CPF for Foxboro, Rosemount & Yokogawa transmitters



5/8"
16mm



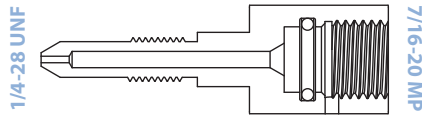
Transmitter Bleed Valve Adapter (1/4"-28 UNF)

Wrench-tight to 5 000 PSI/350 bar/35 MPa (-20°C to 50°C)

Part Number	Connector Type	Special Attributes
MPF-1/4TRM	1/4"-28 UNF Transmitter Male	CPF for Honeywell Transmitters



5/8"
16mm



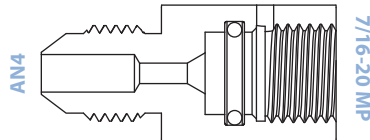
Female - Male AN4 Adapter

Wrench-tight to 5 000 PSI/350 bar/35 MPa (-20°C to 50°C)

Part Number	Connector Type	Special Attributes
MPF-AN4M	AN4	37° flared tube fitting made to exact AS (formerly AN) specifications. Not for in-flight use.



5/8"
16mm



Fitting Kits ■■■

GaugeCalXP Conversion Kit Used to convert GaugeCalXPs to use the CPF fitting system

Part Number	Connects to nVision, XP2i, and M1
4012	Kit contains: MPF-GC (Qty 2), MPF-1/4FPT (Qty 2), MPM-MPM (Qty 2)

Quick Test NPT Kit Quickly connect to an array of NPT fittings

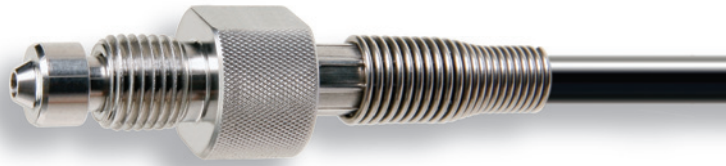
Part Number	
4013	Kit contains: MPF-1/8QTF (Qty 1), MPF-1/4QTF (Qty 1), MPF-1/2QTF (Qty 1)

Combo Pump Fitting Kits Includes hose and fittings to connect the Combo Pump to the appropriate gauge or calibrator

Part Number	Connects to the nVision
4018	Kit contains: MPH-1 (Qty 1), MPM-MPM (Qty 1), MPF-1/8MPT (Qty 2), MPF-1/4MPT (Qty 1), MPF-1/8MPT90 (Qty 1)

Part Number	Connects to the XP2i or M1 Gauge
4019	Kit contains: MPH-1 (Qty 1), MPM-MPM (Qty 1), MPF-1/8MPT (Qty 2), MPF-1/4MPT (Qty 1), MPF-1/8MPT90 (Qty 1), MPF-1/4FPT (Qty 1)

Part Number	Connects to the 30 Series Calibrator
4020	Kit contains: MPH-1 (Qty 1), MPM-MPM (Qty 1), MPF-1/8MPT (Qty 3), MPF-1/4MPT (Qty 1), MPF-1/8MPT90 (Qty 1)



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