Crystal pressure

# Crystal Pressure Fittings CPF

FITTINGS FOR LiFE™

## Common Specifications (applies to all CPF fittings in this datasheet)

### DESCRIPTION

CPF◆ is an improved cone type fitting system that adds a unique o-ring sealing system which permits leak free connections without tools. CPF fittings can be directly connected to ¼" medium pressure cone type fittings from other manufacturers*, provided that wrenches are used to complete the connection. The fittings of the CPF system have been designed and tested to comply with ASME B31.3-2008, Chapter IX: High Pressure Piping.

◆*U.S. Patent No. 8,794,677*

*HiP: *1/4" Female and Male Medium Pressure (LF4 & LM4 series)*

Autoclave Engineers: *1/4" Female and Male Medium Pressure (SF250CX series)*

### PERFORMANCE

| | |
|---|---|
| Maximum Allowable Working Pressure (MAWP): | **10 000 psi / 700 bar / 70 MPa** |
| Finger-tight: | **-20 to 50°C** |
| Wrench-tight: | **-40 to 150°C** |
| Minimum Hose Bend Radius: | **1.0" (25mm)** |

*Most fittings thoughout this document meet the MAWP specificaton of 10000 psi / 700 bar / 70 MPa. Exceptions are labeled with an icon (1, 5, 15) and a key to indicate the pressure rating.*

*Non-Crystal MP adapters require wrench tightening.*

### CONSTRUCTION

| | |
|---|---|
| Thread Type: | **7/16-20 UNF 2B** |
| Cone Angle: | **60°, nominal** |
| Fittings: | **High Strength 316 Stainless Steel** |
| Hose: | **Polyamide core with urethane jacket** |
| External Hose Diameter: | **0.235" (6 mm)** |
| Internal Hose Diameter: | **0.08" (2 mm)** |
| Hose Weight: | **0.0179 lbs/ft (26.6 g/m)** |
| CPF Female O-rings: | **AS568A-012, Viton® 80 or 90 #3981** |
| O-ring Lubricant: | **Molykote® 55** |

*Hose is not compatible with dioctyl sebacate fluid.*

***CAUTION:** To achieve CPF maximum allowable working pressures no o-ring substitutions are allowed.*

### RECOMMENDATIONS

| | |
|---|---|
| Thread Lubricant: | **Use a process compatible fluid** |
| Wrench Torque: | **100–140 in-lbs (11.3–15.8 Nm)** |

*If a torque wrench isn't practical to use, hand tighten then tighten an additional 20 degrees using a wrench.*

## Quick Links

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**Note Regarding CPF Hose (MPH-X)**

Due to the wide variety of operating conditions it may be subject to, Crystal Engineering, as well as Distributors and Representatives of Crystal products, do not warrant that this hose is suitable for any specific use. This hose is not for use with compressed natural gas (CNG).

When used with gases, fuels (liquid or gas) and refrigerants, permeation (i.e., seepage) will occur from inside the hose. In enclosed or unventilated spaces this permeation may result in high concentrations of vapors which are potentially flammable, explosive or toxic.

Care must be taken to protect hoses from snagging, kinking, bending smaller than the minimum bend radius, and cutting. Any hose that has been damaged in any way should be removed from service and discarded immediately.


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

HiP is High Pressure Equipment Company.

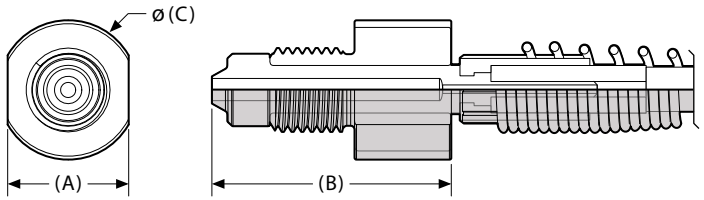
Molykote is a registered trademark of Dow Corning Corporation.

Viton is a registered trademark of DuPont Performance Elastomers.

Swagelok is a registered trademark of Swagelok Company.

## CPF Fittings

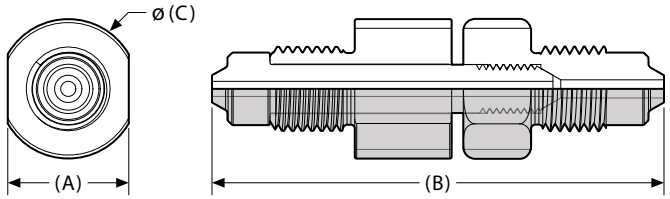
### HOSES (10 000 PSI; FOS–4:1)



| (A) | (B) | (C) |
|---|---|---|
| 0.63" (16 mm) | 1.29" (33 mm) | 0.72" (18 mm) |

| Length | Part Number |
|---|---|
| 1 m | MPH-1 |
| 1.5 m | MPH-1.5 |
| 3 m | MPH-3 |
| 5 m | MPH-5 |
| 10 m | MPH-10 |
| 25 m | MPH-25 |
| 50 m | MPH-50 |
| 100 m | MPH-100 |

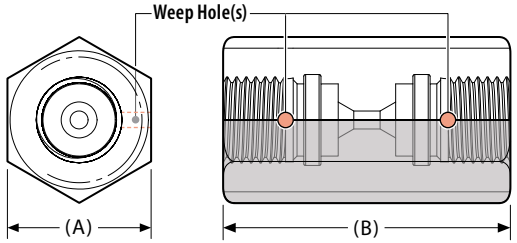
### MALE CONNECTOR



| (A) | (B) | (C) | Part Number |
|---|---|---|---|
| 0.63" (16 mm) | 2.33" (59 mm) | 0.72" (18 mm) | MPM-MPM |

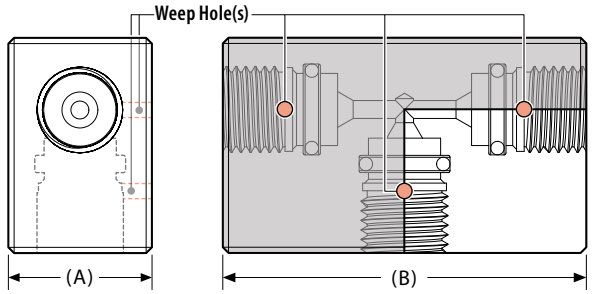
## CPF Fittings

### UNION



| (A) | (B) | Part Number |
|---|---|---|
| 0.75" (19 mm) | 1.50" (38 mm) | MPF-MPF |

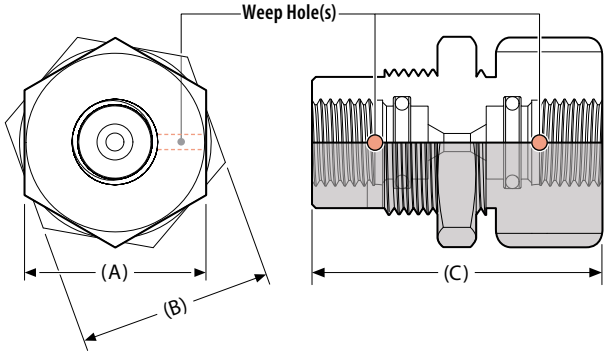
### UNION TEE

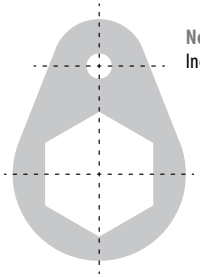


| (A) | (B) | Part Number |
|---|---|---|
| 0.75" (19 mm) | 1.90" (48 mm) | MPF-MPFTU |

## CPF Fittings

### BULKHEAD MOUNT

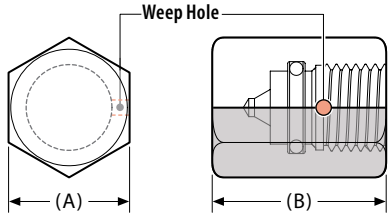




**Note:**
Includes bulkhead retainer (Part # 4417).

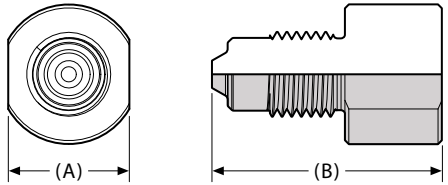
| (A) | (B) | (C) | Part Number |
|---|---|---|---|
| 0.938" (24 mm) | 1.00" (26 mm) | 1.50" (38 mm) | MPF-MPFBULK |

### CAP



| (A) | (B) | Part Number |
|---|---|---|
| 0.63" (16 mm) | 0.90" (23 mm) | MPF-CAP |

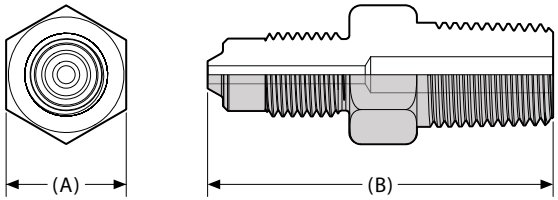
### PLUG

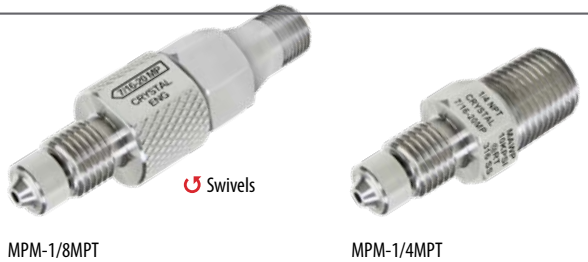


| (A) | (B) | Part Number |
|---|---|---|
| 0.63" (16 mm) | 1.19" (30 mm) | MPM-PLUG |

# NPT Fittings

## CPF MALE TO NPT MALE



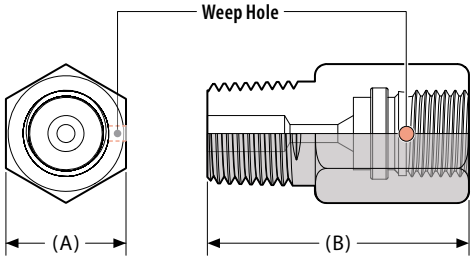

MPM-1/8MPT



MPM-1/4MPT

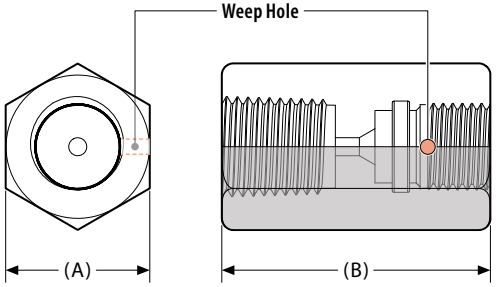
| (A) | (B) | Part Number |
|---|---|---|
| 0.63" (16 mm) | 2.50" (64 mm) | MPM-1/8MPT |
| 0.63" (16 mm) | 1.80" (46 mm) | MPM-1/4MPT |

## NPT MALE



| (A) | (B) | Part Number |
|---|---|---|
| 0.63" (16 mm) | 1.12" (28 mm) | MPF-1/8MPT |
| 0.63" (16 mm) | 1.36" (35 mm) | MPF-1/4MPT |

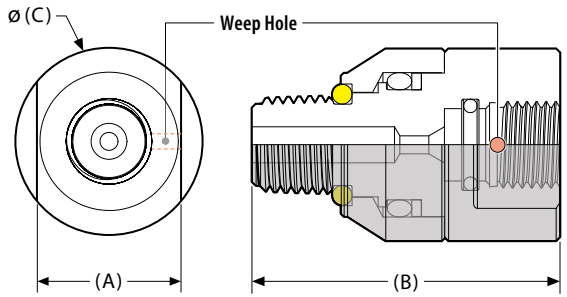
## NPT FEMALE



| (A) | (B) | Part Number |
|---|---|---|
| 0.75" (19 mm) | 1.40" (36 mm) | MPF-1/4FPT |

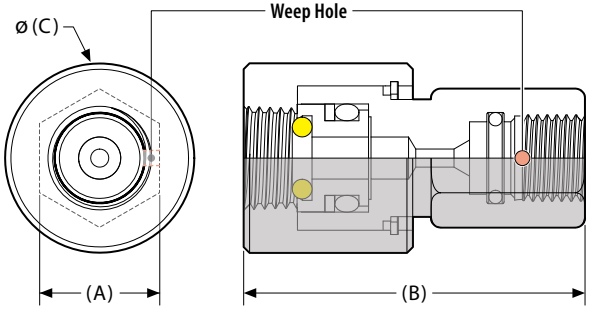
# NPT Fittings

## NPT QUICK TEST MALE



| (A) | (B) | (C) | Part Number |
|---|---|---|---|
| 0.63" (16 mm) | 1.48" (38 mm) | 1.00" (25 mm) | MPF-1/8QTM |
| | Neoprene 70 Replacement O-ring | | AS568A-109, #3998 |
| 0.75" (19 mm) | 1.60" (41 mm) | 0.82" (21 mm) | MPF-1/4QTM |
| | Neoprene 70 Replacement O-ring | | AS568A-111, #3996 |

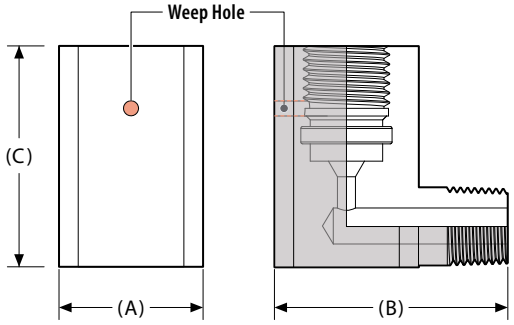
## NPT QUICK TEST FEMALE



| (A) | (B) | (C) | Part Number |
|---|---|---|---|
| 0.63" (16 mm) | 1.68" (38 mm) | 0.85" (22 mm) | MPF-1/8QTF |
| | Neoprene 70 Replacement O-ring | | AS568A-105, #4038 |
| 0.63" (16 mm) | 1.78" (45 mm) | 1.00" (25 mm) | MPF-1/4QTF |
| | Neoprene 70 Replacement O-ring | | AS568A-108, #4007 |
| 0.63" (16 mm) | 1.81" (46 mm) | 1.37" (35 mm) | MPF-1/2QTF 5 |
| | Neoprene 70 Replacement O-ring | | AS568A-112, #4042 |

Fitting rated to 5000 psi 5

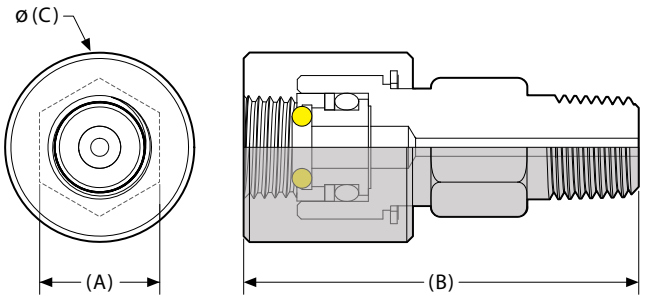
## 90° NPT MALE



| (A) | (B) | (C) | Part Number |
|---|---|---|---|
| 0.75" (19 mm) | 1.20" (31 mm) | 1.15" (29 mm) | MPF-1/8MPT90 |

# NPT Fittings

## NPT MALE TO NPT QUICK TEST FEMALE



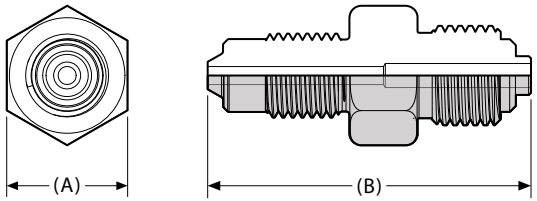
| (A) | (B) | (C) | Part Number |
|---|---|---|---|
| 0.63" (16 mm) | 1.90" (48 mm) | 1.00" (25 mm) | 1/8MPT-1/4QTF |
| | Neoprene 70 Replacement O-ring | | AS568A-108, #4007 |
| 0.63" (16 mm) | 2.06" (52 mm) | 1.00" (25 mm) | 1/4MPT-1/4QTF |
| | Neoprene 70 Replacement O-ring | | AS568A-108, #4007 |

## NPT FITTING KITS

| | | Part Number |
|---|---|---|
| Complete NPT Hose and Fitting Kit | Includes: **1/8 NPT** [Male (2), Male 90°, Male Quick Test, and Female Quick Test], **1/4 NPT** [Male (2), Female, Male Quick Test, and Female Quick Test], **1/2 NPT** [Female Quick Test], **Tube** [1/4 Male, 3/8 Male, and 1/2 Male], **AN4 Male, Transmitter** [1/4 Male and 5/16 Male], **CPF Connectors** [Male-Male, T-Union, Plug, and Cap (2)], **Hose** [1 meter], and **Custom Carrying Case**. | 4016 |
| Quick Test NPT Kit | Includes: MPF-1/8QTF, MPF-1/4QTF, and MPF-1/2QTF | 4013 |

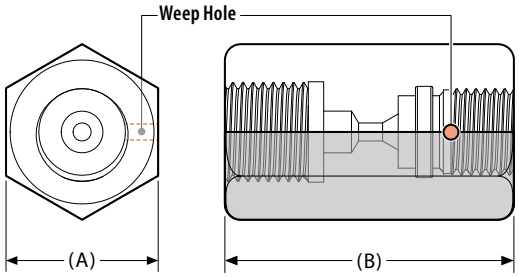
# BSP Fittings

## CPF MALE TO BSP MALE



| (A) | (B) | Part Number |
|---|---|---|
| 0.63" (16 mm) | 1.68" (43 mm) | MPM-1/4BSPM |

## BSP FEMALE



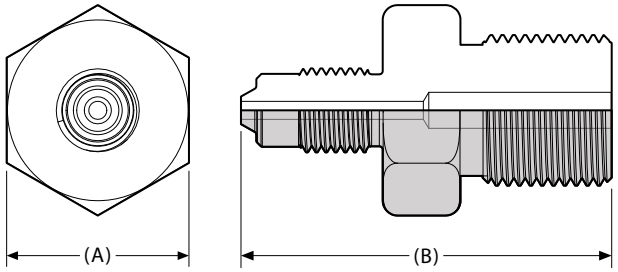
| (A) | (B) | Part Number |
|---|---|---|
| 0.79" (20 mm) | 1.50" (38 mm) | MPF-1/8BSPF |
| 0.79" (20 mm) | 1.50" (38 mm) | MPF-1/4BSPF |
| 0.98" (25 mm) | 1.75" (45 mm) | MPF-3/8BSPF |
| 1.18 (30 mm) | 2.05" (52 mm) | MPF-1/2BSPF |

## BSP FITTING KITS

| | | Part Number |
|---|---|---|
| Complete BSP Hose and Fitting Kit | Includes: **BSP Female** [1/8, 1/4 (2), 3/8, and 1/2], **NPT** [1/4 Quick Test Female and 1/8 Male (2)], **Transmitter** [1/4 Male and 5/16 Male], **CPF Connectors** [Male-Male, T-Union, Plug, and Cap (2)], **Hose** [1 meter], **Custom Carrying Case**. | 4017 |
| BSP Test Kit | Includes: MPF-1/8BSPF, MPF-1/4BSPF, MPF-3/8BSPF, and MPF-1/2BSPF | 4015 |

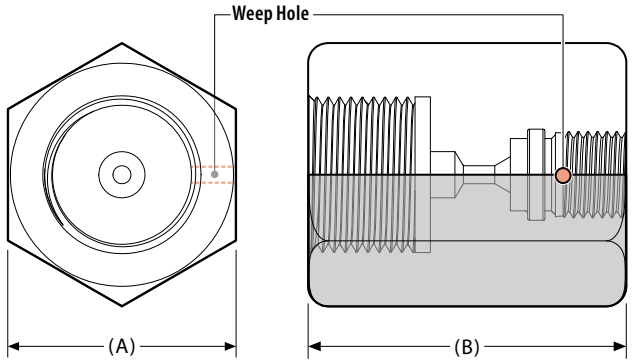
# M20 Fittings

## CPF MALE TO M20 MALE



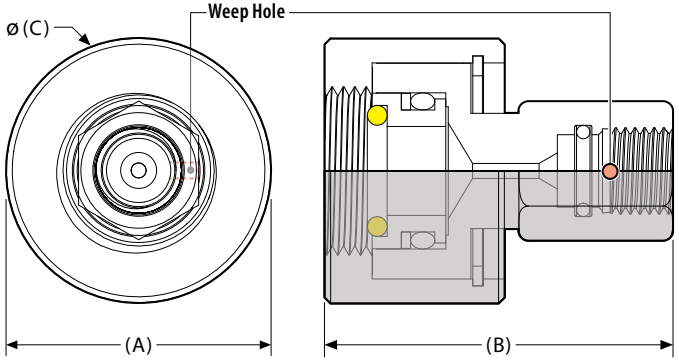
| (A) | (B) | Part Number |
|---|---|---|
| 0.95" (24 mm) | 1.93" (49 mm) | MPM-M20X1.5M |

## M20 FEMALE



| (A) | (B) | Part Number |
|---|---|---|
| 1.18" (30 mm) | 1.65" (42 mm) | MPF-M20X1.5F |

## M20 QUICK TEST FEMALE



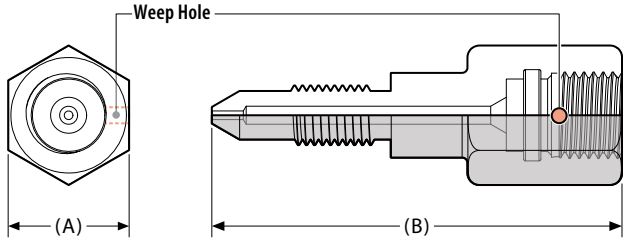
| (A) | (B) | (C) | Part Number |
|---|---|---|---|
| 0.63" (16 mm) | 1.81" (46 mm) | 1.375" (35 mm) | MPF-M20QTF 5 |
| | | | AS568A-112, #4042 |

Neoprene 70 Replacement O-ring

Fitting rated to 5000 psi 5

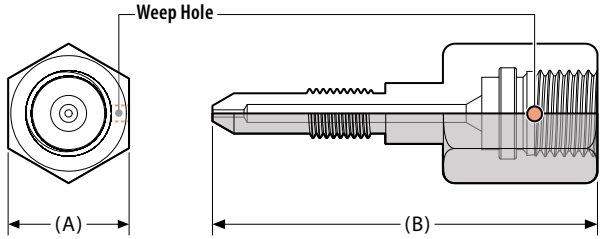
# Transmitter Fittings

## FOR FOXBORO, ROSEMOUNT, & YOKOGAWA



| (A) | (B) | Part Number |
|---|---|---|
| 0.63" (16 mm) | 2.13" (54 mm) | MPF-5/16TRM 5 |

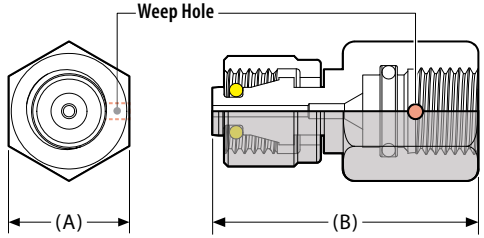
## FOR HONEYWELL



| (A) | (B) | Part Number |
|---|---|---|
| 1.18" (30 mm) | 1.65" (42 mm) | MPF-1/4TRM 5 |

# Tube Fitting

## TUBE MALE



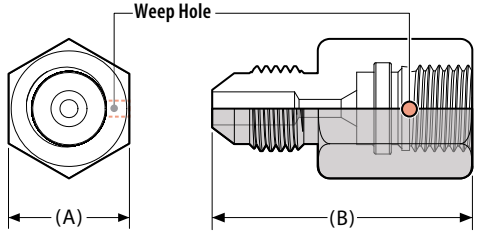
↺ Swivels

| (A) | (B) | Part Number |
|---|---|---|
| 0.63" (16 mm) | 1.38" (35 mm) | MPF-1/4TBM 5 |
| VITON 90 Replacement O-ring | | AS568A-007, #4104 |
| 0.63" (16 mm) | 1.50" (38 mm) | MPF-3/8TBM 5 |
| VITON 90 Replacement O-ring | | AS568A-010, #4051 |
| 0.63" (16 mm) | 1.74" (44 mm) | MPF-1/2TBM 5 |
| VITON 80 Replacement O-ring | | AS568A-012, #3981 |

Fittings rated to 5000 psi 5

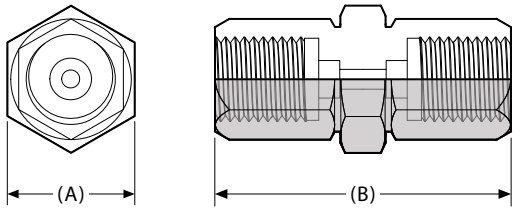
# AN4 Fittings

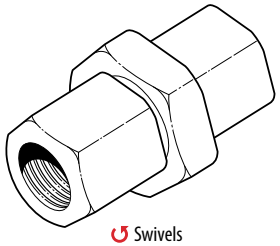
## AN4 MALE



| (A) | (B) | Part Number |
|---|---|---|
| 0.63" (16 mm) | 1.35" (34 mm) | MPF-AN4M 5 |

## AN4 UNION SWIVEL (NON CRYSTAL)



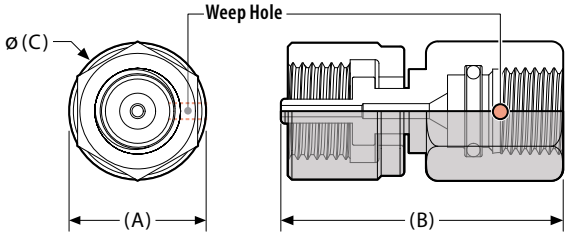
↺ Swivels

| (A) | (B) | (C) | Part Number |
|---|---|---|---|
| 0.56" (14 mm) | 1.60" (41 mm) | 0.69" (17 mm) | 4377 5 |

Fittings rated to 5000 psi 5

# Pump Adapter

## QUICK CONNECT NUT



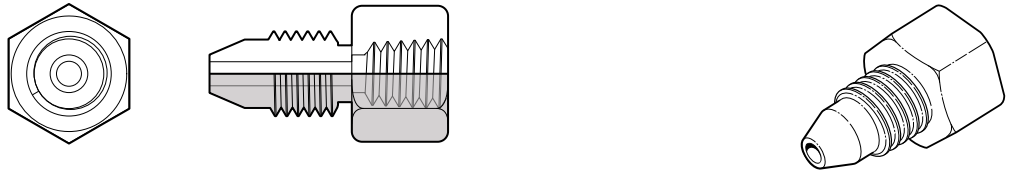
↺ Swivels

| (A) | (B) | Part Number |
|---|---|---|
| 0.63" (16 mm) | 1.47" (37 mm) | MPF-QCN-S 5 |

Fittings rated to 5000 PSI 5

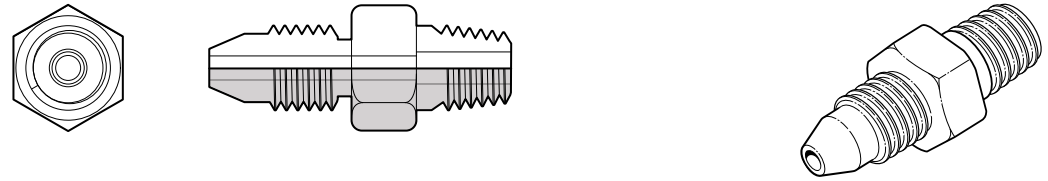
# Non-Crystal MP Adapters

## MEDIUM PRESSURE MALE TO NPT FEMALE



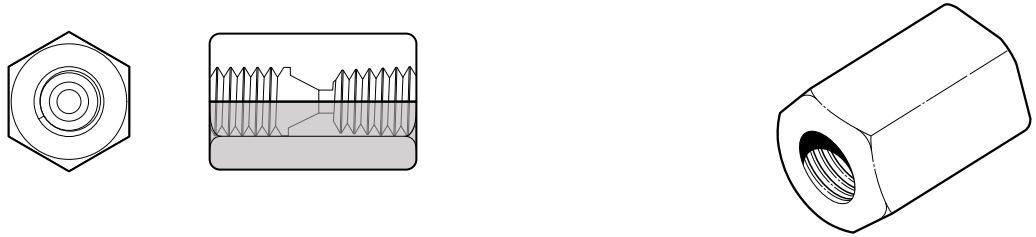
| Size | Product Marking | Part Number |
|---|---|---|
| 1/8 NPT | 2NF04M15 | 4497 15 |
| 1/4 NPT | 4NF04M15 | 4498 15 |
| 3/8 NPT | 6NF04M15 | 4499 15 |
| 1/2 NPT | 8NF04M15 | 4500 15 |

## MEDIUM PRESSURE MALE TO NPT MALE



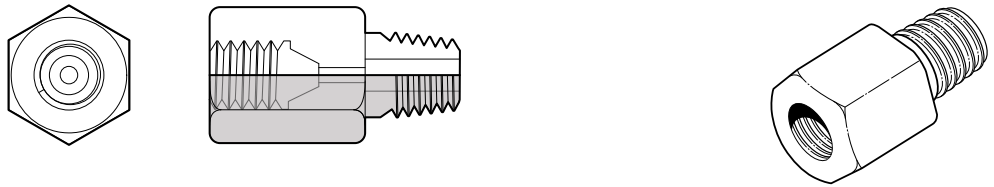
| Size | Product Marking | Part Number |
|---|---|---|
| 1/4 NPT | 4N04M15 | 4698 15 |
| 3/8 NPT | 6N04M15 | 4492 15 |
| 1/2 NPT | 8N04M15 | 4493 15 |

## MEDIUM PRESSURE FEMALE TO NPT FEMALE



| Size | Product Marking | Part Number |
|---|---|---|
| 1/8 NPT | 2NF04MF15 | 4501 15 |
| 1/4 NPT | 4NF04MF15 | 4715 15 |
| 3/8 NPT | 6NF04MF15 | 4502 15 |
| 1/2 NPT | 8NF04MF15 | 4503 15 |

## MEDIUM PRESSURE FEMALE TO NPT MALE



| Size | Product Marking | Part Number |
|---|---|---|
| 1/4 NPT | 4N04MF15 | 4714 15 |
| 3/8 NPT | 6N04MF15 | 4494 15 |
| 1/2 NPT | 8N04MF15 | 4495 15 |
| 3/4 NPT | 12N04MF10 | 4496 |

Fittings rated to 15000 PSI 15

*Non-Crystal MP adapters require wrench tightening.*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