

### UNIT CONVERSIONS & FORMULAS

| Measurement | Conversion             | Example                           |
|-------------|------------------------|-----------------------------------|
| Length      | 1 in. = 25.4 mm        | 12 in. x 25.4 = 304.8 mm          |
|             | 1 in. = .0254 m        | 120 in. x .0254 = 3.05 m          |
|             | 1 ft. = .3048 m        | 12 ft. x .3048 = 3.68 m           |
|             | 1 mm = .0394 in.       | 100 mm x .0394 = 3.94 in.         |
|             | 1 m = 39.37 in.        | 10 m x 39.37 = 393.7 in.          |
|             | 1 m = 3.281 ft.        | 10 m x 3.281 = 32.81 ft.          |
| Volume      | 1 gal = 3.785 l        | 10 gal x 3.785 = 37.85 l          |
|             | 1 liter = .2642 gal    | 100 liters x 26.42 = 26.42 gal    |
| Weight      | 1 lb. = .454 kg        | 10 lbs. x .454 = 4.54 kg          |
|             | 1 kg = 2.205 lbs.      | 10 kg x 2.205 = 22.05 lbs.        |
| Pressure    | 1 psi = .06895 bar     | 40,000 psi x .06895 = 2,758 bar   |
|             | 1 bar = 14.503 psi     | 2,758 bar x 14.503 = 40,000 psi   |
| Flow        | 1 gpm = 3.785 lpm      | 30 gpm x 3.785 = 113.55 lpm       |
|             | 1 lpm = .2642 gpm      | 100 lpm x .264 = 26.42 gpm        |
| Force       | 1 lb. = 4.448 N        | 100 lbs. x 4.448 = 444.8 N        |
|             | 1 N = .2248 lbs.       | 900 N x .2248 = 202.32 lbs.       |
| Torque      | 1 lb.-ft. = 1.3567 N-m | 100 lb.-ft. x 1.3567 = 135.67 N-m |
|             | 1 N-m = .737 lb.-ft.   | 100 N-m x .737 = 73.7 lb.-ft.     |
| Power       | 1 hp = .7457 kW        | 50 hp x .7457 = 37.29 kW          |
|             | 1 kW = 1.341 hp        | 50 kW x 1.341 = 67.05 hp          |

| Formula             | English Units         | Metric Units         |
|---------------------|-----------------------|----------------------|
| Power Requirements* | hp = gpm x psi / 1550 | kW = lpm x bar / 540 |

\*Formulas assume 90% mechanical efficiency

# TECHNICAL

20,000 PSI

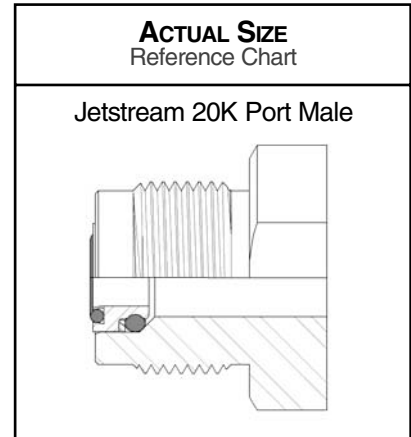
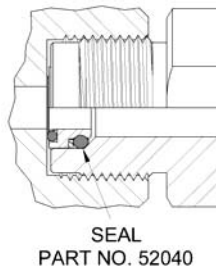


## CONNECTION TYPES

Several connection types are available for use with Jetstream 20,000 PSI products. The purpose of this section is to allow users to identify the connections needed and provide information on the features and proper use of each.

### JETSTREAM 20K PORT

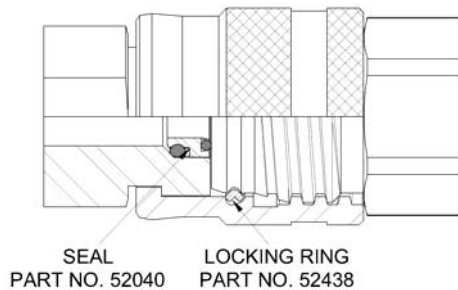
- Specially designed to prevent leakage and wear frequently associated with standard connections by incorporating a replaceable seal assembly that is hydraulic biased to increase sealing force as pressure increases.
- Repairing leaks requires only replacement of the seal, compared with standard connections which often require re-coning, or component replacement
- Utilized in most Jetstream 20,000 psi products



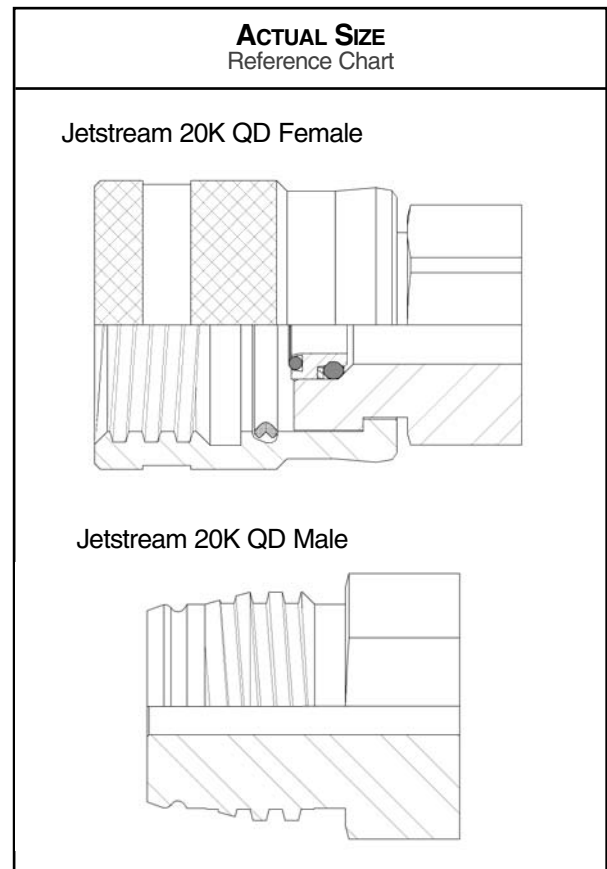
| Connection Thread | Recommended Torque |     |
|-------------------|--------------------|-----|
|                   | ft-lbs             | N-m |
| 1" - 16UNF        | 50                 | 68  |

**Note:** Always apply thread lubricant (anti-seize) to male threads before assembling Jetstream 20K Port connections. See Fittings, Page F-1, for thread lubricants available from Jetstream.

### JETSTREAM 20K QUICK DISCONNECT



- Enables fast connection and removal of 20,000 psi tools
- Utilizes the same hydraulically-biased replaceable seal as the Jetstream 20K Port Connection.
- Hand-tightening is all that is required. A locking ring in the female swivel fitting holds the male fitting in place
- Repairing leaks requires only replacement of the seal, compared with standard connections which often require re-coning or component replacement
- Available on Jetstream 20,000 psi rubber hoses
- Connectors are available to use the Quick Disconnect fitting with any 20,000 psi product

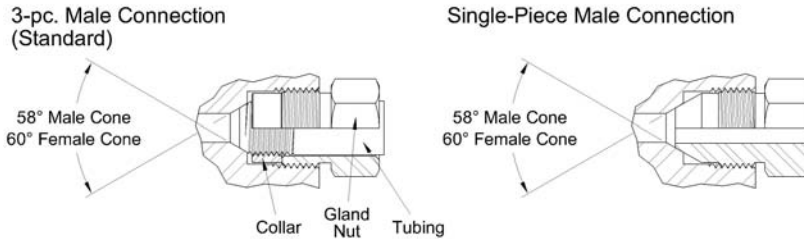


# TECHNICAL

20,000 PSI

## CONNECTION TYPES

### MEDIUM PRESSURE (MP)



- Industry standard connection for 20,000 psi applications
- Connections exist in two different forms:
  1. Used to connect medium pressure tubing with a conical male seat and left-handed threads to a female port using a gland nut and left-hand threaded collar (Gland, Collar & Tubing).
  2. For many medium pressure male fittings, the geometry of the gland, collar, and tubing is combined into one component that connects directly to a medium pressure female port (Single-Piece Style).
- With proper care, this connection is suitable for repetitive connection/disconnection
- Damage from repeated or improper use can often be repaired using reconing tools. For details on tubing preparation and repair equipment, contact Jetstream Sales.

| Size     | Gland Connection Thread | Tubing Thread*<br>Left-Hand | Recommended Torque |     |
|----------|-------------------------|-----------------------------|--------------------|-----|
|          |                         |                             | ft-lbs             | N-m |
| 1/4" MP  | 7/16" - 20UNF           | 1/4" - 28UNF                | 20                 | 27  |
| 3/8" MP  | 9/16" - 18UNF           | 3/8" - 24UNF                | 30                 | 41  |
| 9/16" MP | 13/16" - 16UNF          | 9/16" - 18UNF               | 50                 | 68  |
| 3/4" MP  | 3/4" - 14NPSM           | 3/4" - 16UNF                | 90                 | 122 |
| 1" MP    | 1-3/8" - 12UNF          | 1" - 14UNF                  | 125                | 170 |

\* For three-piece connection styles only

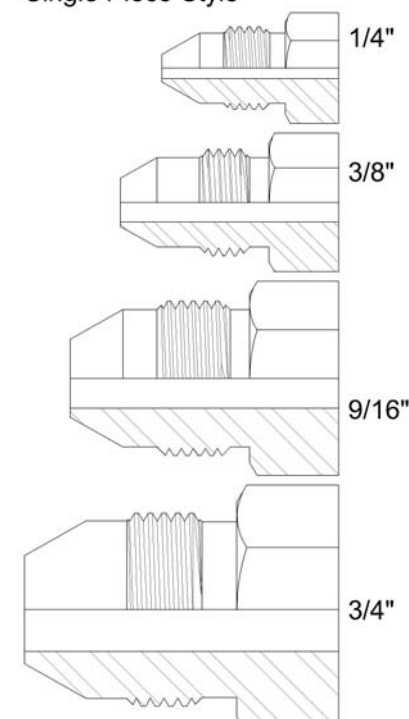
### Connection Instructions

1. 3-pc. Male Connection Style only – Liberally apply anti-seize to male tubing threads to prevent thread galling.
2. 3-pc. Male Connection Style only – Slide gland nut over tubing and thread collar (left-hand threaded) onto tubing until it is past the first one or two full threads of the tubing.
3. Both styles – Liberally apply anti-seize to male connection threads and male cone.
4. Both Styles – Install male connection into female port and tighten according to torque specification in chart above.

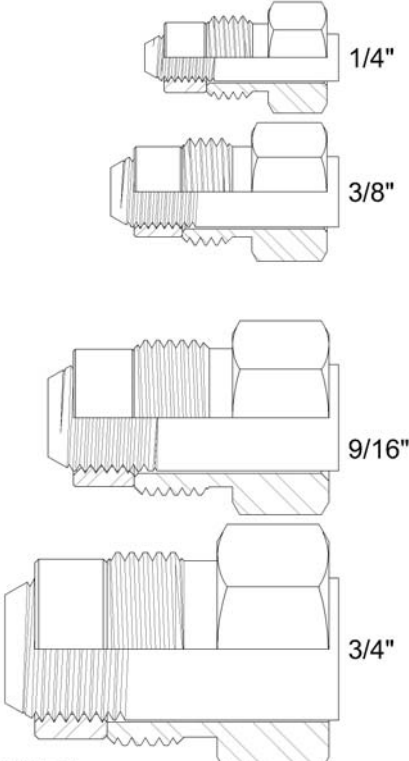
**Note:** Always apply thread lubricant (anti-seize) to male threads before assembling Medium Pressure connections to prevent galling of threads. See page F-1 for available thread lubricants.

**ACTUAL SIZE**  
Reference Chart

**Single Piece Style**



**Gland, Collar, & Tubing**



1" MP Not Shown

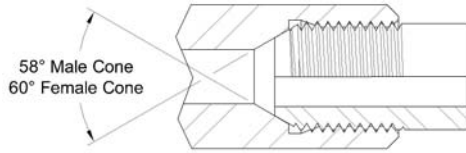
# TECHNICAL

20,000 PSI



## CONNECTION TYPES

### MEDIUM PRESSURE TUBE (MP TUBE)



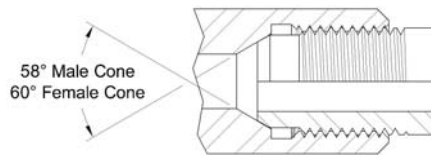
- Industry standard connection for 20,000 psi applications
- Left-hand threaded connections are used in standard medium pressure three-piece connection style.
- Both left-hand and right-hand threaded connections are used in tube cleaning applications in which the male connection is inserted directly into a female connection without the use of a gland and collar. For use where standard connections are too large in diameter.

| Size             | Tube Connection Thread | Recommended Torque |     |
|------------------|------------------------|--------------------|-----|
|                  |                        | ft-lbs             | N-m |
| 1/4" MP Tube LH  | 1/4"-28UNF-LH          | 15                 | 20  |
| 1/4" MP Tube RH  | 1/4"-28UNF-RH          |                    |     |
| 3/8" MP Tube LH  | 3/8"-24UNF-LH          | 25                 | 34  |
| 3/8" MP Tube RH  | 3/8"-24UNF-RH          |                    |     |
| 9/16" MP Tube LH | 9/16"-18UNF-LH         | 30                 | 41  |
| 9/16" MP Tube RH | 9/16"-18UNF-RH         |                    |     |
| 3/4" MP Tube LH  | 3/4"-16UNF-LH          | 45                 | 61  |
| 3/4" MP Tube RH  | 3/4"-16UNF-RH          |                    |     |
| 1" MP Tube LH    | 1"-14UNF-LH            | 70                 | 95  |

**Note:** Always apply thread lubricant (anti-seize) to male threads before assembling medium pressure connections. See Fittings, Page F-1, for thread lubricants available from Jetstream.

### JETSTREAM LANCE

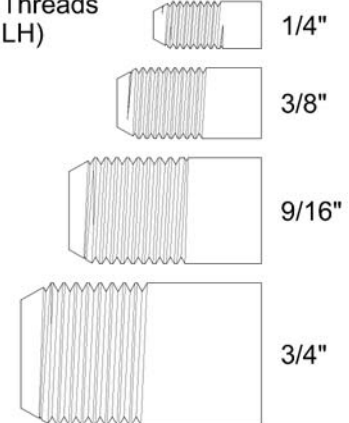
- Formerly known as Jetstream's "Rigid Lance" connection
- Commonly found in Jetstream flex and rigid lances and tube nozzles
- Male Jetstream Lance connections will fit into female right hand medium pressure tube connections, but female Jetstream Lance connections cannot be used with male medium pressure tube connections.



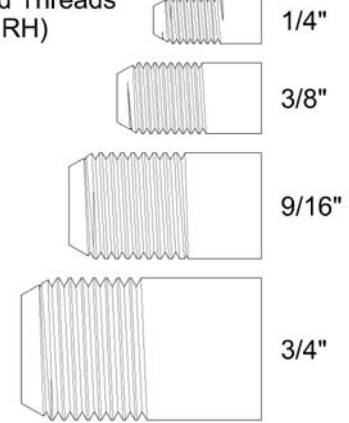
| Size           | Lance Connection Thread | Recommended Torque |     |
|----------------|-------------------------|--------------------|-----|
|                |                         | ft-lbs             | N-m |
| 1/4" JS Lance  | 1/4"-28UNF              | 15                 | 20  |
| 3/8" JS Lance  | 3/8"-24UNF              | 25                 | 34  |
| 9/16" JS Lance | 9/16"-18UNF             | 30                 | 41  |

#### ACTUAL SIZE Reference Chart

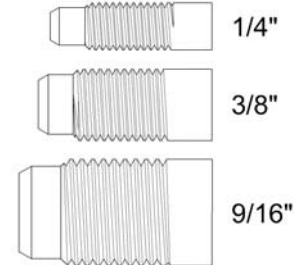
Medium Pressure Lance  
Left-Hand Threads  
(MP Tube LH)



Medium Pressure Lance  
Right-Hand Threads  
(MP Tube RH)



#### ACTUAL SIZE Reference Chart



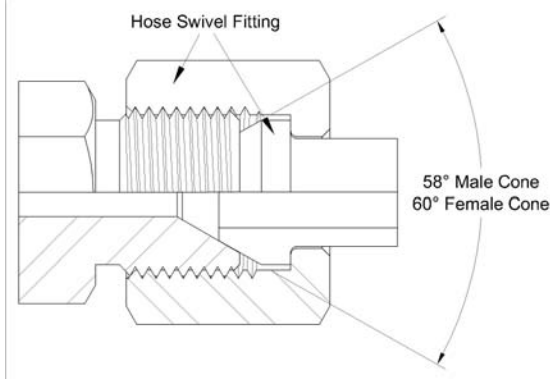
**Note:** Always apply thread lubricant (anti-seize) to male threads before assembling Jetstream Lance connections. See Fittings, Page F-1, for thread lubricants available from Jetstream.

# TECHNICAL

20,000 PSI

## CONNECTION TYPES

### TYPE "M"



- Industry standard connection
- Designed for fast, simple connection of waterblast hoses and lances to waterblast equipment
- Male conical seat protected from damage by the hose swivel nut
- Unlike medium pressure connections, the seating surfaces do not rotate against each other when connections are made, resulting in a more reliable, longer lasting connection
- Verify pressure rating of Type "M" hoses and fittings before use as the connection type is used for a wide range of pressures due to its ease of use and reliability

| Size             | Connection Thread | Recommended Torque |     |
|------------------|-------------------|--------------------|-----|
|                  |                   | ft-lbs             | N-m |
| 9/16" Type "M"   | 9/16" - 18UNF     | 30                 | 41  |
| 3/4" Type "M"    | 3/4" - 16UNF      | 45                 | 61  |
| 1" Type "M"      | 1" - 12UNF        | 70                 | 95  |
| 1 5/16" Type "M" | 1-5/16" - 12UNF   | 110                | 149 |

**Note:** Always apply thread lubricant (anti-seize) to male threads before assembling Type "M" connections. See Fittings, Page F-1, for thread lubricants available from Jetstream.

