

Operating Instructions

Operating Instructions for FI and FIxM (Metric Termination) Internal Pneumatic Operated Connector.



FI connectors provide fast, leak-free connections for pressure and vacuum testing, fluid filling and flushing. The connectors are activated by compressed regulated air acting on a piston which expands an elastomeric seal to form a leak-tight connection. Testing, filling or flushing of the piece is accomplished by introducing liquid or gas media through the FasTest FI connector.

The use of pressurized media for sealing, testing and filling requires a thorough understanding of the FasTest FI Installation and Operating Instructions.

Do not operate FasTest connectors without completely reading and understanding the following Installation and Operating Instructions.

Read and understand each of the following six steps before operating the connector.

- Installation of seals.
- Extended shaft, stroke limit
- Tapered front washer feature
- Mounting the connector.
- Attachment of pilot pressure and test media supply lines.
- Connector operation instructions.

A: Installation of Seals

- For seal replacement, remove retaining ring from shaft tip and slide off old seal set and washers. Spacer piece is to remain on connector shaft.
- Seal Set contains elastomer seals, washers and retaining ring. For complete listing of seal set size ranges see Chart 2.
- Verify that seals and washers are the same size (outside diameter).
- Assemble seal set onto shaft per Diagram 1.
- Attach new retaining ring to groove in shaft tip. Flat side of retaining ring must face away from washer.
- A tapered washer with a counterbore is used at the shaft end on all FI01, FI1, FI2, FI3 and FI4 connectors. The retaining ring will be contained within the counterbore when pilot pressure is delivered to the connector

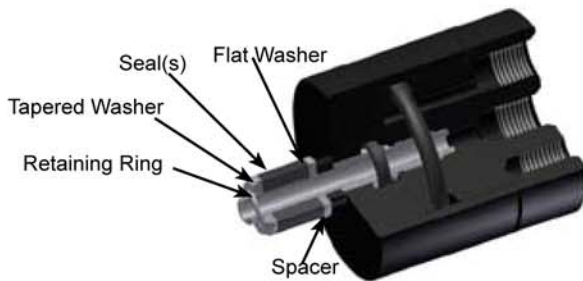


Diagram 1:
FI1 with Seal Set

CAUTION:

- Periodically inspect connector, seals and washers for wear or damage. Replace worn or damaged connector seal sets to prevent loss of sealability and personal injury.
- If replacing seals only, inspect washers for warping, corrosion, or excessive wear.
- Replace complete FasTest main seal set if washers are warped, corroded or worn.
- Always replace retaining ring when changing the main seal.

B: Extended Shafts:

Connectors with extended shafts are designed for sealing remote ports or for applications requiring connectors to be offset rather than side-by-side mounted which may be required when multiple test ports have close center-to-center distances.



Stroke Limiters:

FI connectors that have shaft extensions of at least one inch (1") beyond the standard for any model FI connector will be assembled with a stroke limiter. This feature will prevent over pressurization and excessive travel of the FI seals when pilot pressure is applied to an FI not placed in a test piece.

Additionally, if an FI stroke limiter prevents sufficient pressurization for a sealing or testing application, it may be removed very easily without reducing the effectiveness of the connector.

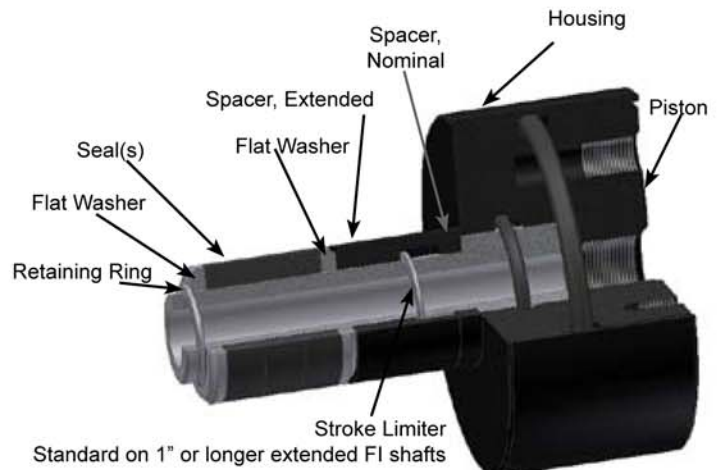


Diagram 2:
FI5 1" extended shaft and standard seal set

Note: A tapered washer with a counterbore is used on all FI01, FI1, FI2, FI3 and FI4 connectors. The retaining ring will be recessed in the washer's counterbore when the connector is pressurized

C: Dimensions

Maximum Test Pressure: 120 psi

Vacuum Rating: 10-8 torr

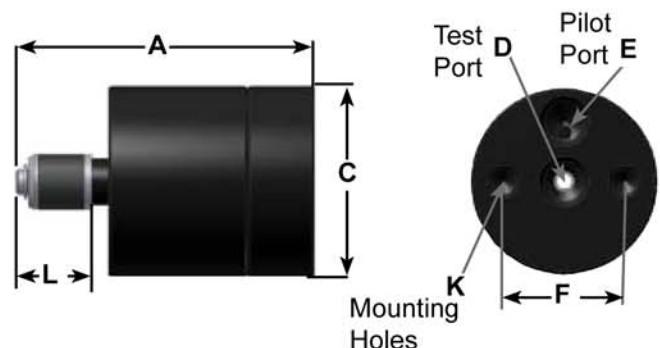


Diagram 3: Connector Features

Chart 1: FI Connector Dimensions

FI	A	C	D	E	F	K*	L*
FI01, FI01M	1.98	1.25	10-32 UNF, M5X8	10-32 UNF, 1/8 BSPP	0.80	10-32 UNF, M5X8	0.53
FI1, FI2, FI1M, FI2M	2.44	1.57	1/8** NPSF, 1/8 BSPP	1/8** NPSF, 1/8 BSPP	1.02	1/4-28 UNF, M6X1.0	0.59
FI3, FI4, FI3M, FI4M	2.60	2.36	1/8** NPSF, 1/8 BSPP	1/8** NPSF, 1/8 BSPP	1.60	1/4-28 UNF, M6X1.1	1.08
FI5, FI6, FI5M, FI6M	3.66	3.49	1/2** NPSF, 1/2 BSPP	1/2** NPSF, 1/2 BSPP	2.31	1/4-28 UNF, M8X1.25	1.61
FI7, FI8, FI7M, FI8M	3.36	4.20	3/4** NPSF, 3/4 BSPP	3/4** NPSF, 3/4 BSPP	3.00	1/4-28 UNF, M6X1.25	1.63

*L = Minimum insertion length of test piece

** Can be used with BSP or NPT male fittings

Chart 2: FasTest FI Connector Seals

Model	FIS Seal Set	Sealing Range	No of Seals	Max Flow
FI01, FI01M	01 1/8NPT*	.330-.394	1 2	0.060"
FI1, FI1M	11 1/4NPT*	.394-.472	1 2	0.130"
	12	.472-.551	1	
	13	.551-.630	1	
FI2, FI2M	3/8NPT* 21 1/4NPT* 22 23	.630-.709 .709-.797 .787-.866	2 1 2 1 1	0.17"
FI3, FI3M	31 3/4NPT* 32 33	.866-.945 .945-1.024 1.024-1.102	2 2 2 2	0.21"
FI4, FI4m	41 1NPT 42 43	1.102-1.181 1.181-1.260 1.260-1.339	2 2 2 2	0.28"
FI5, FI5M	51 52 1-1/4NPT 53	1.339-1.457 1.457-1.575 1.575-1.693	3 3 3 3	0.56"
FI6, FI6M	61 1-1/2NPT 62 63	1.693-1.852 1.850-2.008 2.008-2.185	3 3 3 3	0.72"
FI7, FI7M	71 2NPT 72 73 2-1/2NPT	2.185-2.305 2.305-2.445 2.445-2.585	3 3 3 3	0.92"
FI8, FI8M	81 82 83	2.585-2.725 2.725-2.865 2.865-3.005	3 3 3	0.92"

* Main Seal is neoprene. NPT seals are urethane. FI NPT seals sets contain a urethane main seal with additional neoprene face seal.

** FI NPT seal sets include a face seal.

Note: "M" Designates metric customer interface. See Chart 1 for metric mounting hole thread sizes.

D: Mounting of Connector FI model connector

The test connector must be secured to the test piece with a mechanical

or other device to assure the connector is not uncoupled from the test piece by the uncoupling force of the test itself. The securing or holding device may be a fixture, clamp, cylinder or other appropriate means that prevents ejection of the test piece from the connector.

Uncoupling force example:

Test piece has a 1/2" O.D. and is tested at 100 psi maximum. Uncoupling force = area (πr^2) x pressure = $\pi .25^2 \times 100 = 20$ lbs. Secured device should be designed to withstand this force and include an adequate margin for safety. Do not activate the connector without an adequate and safe securing mechanism.

Mount the FasTest FI connector to the fixture or appropriate device using either threaded mounting holes on the rear of the connector body, or appropriate adapter.

E: Attaching Pressure Lines FI(M) model connector

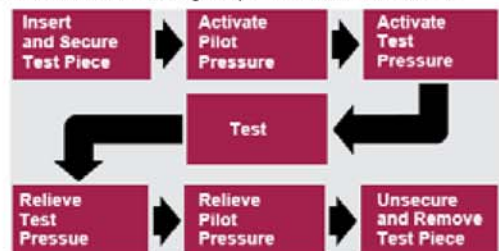
1. Attach pilot pressure line to pilot port "E", Diagram 3. A pneumatic related source is required to maximize seal life and assure optimum seal-ability for the application. The pilot pressure should be minimized to maintain sealing on the test piece without excessive compression of seal. Excess pilot pressure may reduce the life of the seal.
2. Attach test media line to test port "D", Diagram 3.
3. Provide a means whereby test pressure will not be introduced until pilot pressure required to seal is reached. The means should also provide quick exhaust of test pressure in the event pilot pressure falls below the minimum required to seal.

F: Connector Operation

FI Model connector into ports, tubes, etc.

WARNING: The FI connector must be SECURED to the test piece by a mechanical device before proceeding.

Activate connector testing sequence as shown below



Pilot Pressure. Regulate pilot pressure to the minimum required pressure for sealing under test conditions (pressure or vacuum). Use of minimum required pilot pressure will prolong seal life. Generally, a 60 to 90 psi pneumatic pilot pressure source is required.

Test Pressure. Maximum rated test pressure for standard FI models is 120 psi. With connector secured and pilot activated, introduce gas or liquid through the FasTest FI connector until desired testing, filling or flushing is complete.

FasTest, Inc. Product Warranty

FasTest, Inc. warrants its products against defects of workmanship and/or material for 1 year from the date of the sale by FasTest, Inc. This warranty is void if the product is misused, tampered with or used in a manner that is not in accordance with FasTest, Inc. recommendations and/or instructions. FasTest, Inc. is not liable for consequential or other damages including, but not limited to, loss, damage, personal injury, or any other expense directly or indirectly arising from the use of or inability to use its products either separately or in combination with other products. ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, WHETHER ORAL OR WRITTEN, INCLUDING BUT NOT LIMITED TO WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

Remedy under this warranty is limited to replacement of the product or an account credit in the amount of the original selling price, at the option of FasTest, Inc. All allegedly defective products must be returned prepaid transportation to FasTest, Inc. along with information describing the products performance, unless disposition in the field is authorized in writing by FasTest, Inc.