

## ASTM F1387 Test Certificate



**Manufacturer:** FITOK

**Testing Overview:** ASTM F1387, Standard Specification for Performance of Piping and Tubing Mechanically Attached Fittings, is one of internationally recognized authoritative standards. FITOK 6D Series Tube Fittings have passed all standard and supplementary tests listed below and meet the testing requirements of ASTM F1387. Thus, FITOK 6D Series Tube Fittings are fully ASTM F1387 certified through a third party.

**Testing Sample:** 6D Series Tube Fittings

**Testing Description:**

Standard	Section	Name of Test	Status	
ASTM F1387	Standard Qualification Tests	A2	Examination of Specimen	Pass
		A3	Pneumatic Proof Test	Pass
		A4	Hydrostatic Proof Test	Pass
		A5	Impulse Test	Pass
		A6	Flexure Fatigue Test	Pass
		A7	Tensile Test	Pass
		A8	Hydrostatic Burst Test	Pass
		A9	Repeated Assembly Test	Pass
		A10	Rotary Flexure Test	Pass
		Supplementary Tests	S2	Thermal Cycling Test
S3	Elevated Temperature Soak Test		Pass	
S4	Stress-Corrosion Test		Pass	
S5	Torsion Test		Pass	
S6	High Impact Shock Test		Pass	
S7	Fire Test		Pass	
S8	Vibration Test		Pass	

# Standard Qualification Tests

## A2 Examination of Specimen

This test is designed to verify the assemblability of mechanically attached fittings.

## A3 Pneumatic Proof Test

This test is performed by pressurizing the test specimen(s) using dry air or nitrogen (N<sub>2</sub>). The initial pressure of 0.690 MPa (100 psi) is applied. If there is no leakage, the pressure is gradually increased to 125% of rated pressure of the pipe or tube or 3.45 MPa (500 psi), the specimen still shows no evidence of leakage after the second pressurization period.

## A4 Hydrostatic Proof Test

This test is designed to determine whether mechanically attached fittings still seal after being subjected to 1.5 times the maximum working pressure.

## A5 Impulse Test

This test is performed by filling the test specimens with hydraulic fluid or water. The maximum pressure attained during the impulse cycle shall be 133% of the performance pressure. The specimen is then depressurized to a pressure not greater than  $20 \pm 5\%$  of the performance pressure. Each period of pressurization/depressurization is equal to one impulse cycle. The test specimens must be subjected to one million (10<sup>6</sup>) cycles without leakage.

## A6 Flexure Fatigue Test

The significance of this test is to verify the capability of the mechanically attached fitting joint to perform adequately at rated pressure in a flexure environment. The test specimen is subjected to flexure while being pressurized to the maximum rated pressure of the pipe or tube or mechanically attached fitting. The specimen is subjected to a bidirectional flexure whose plus (+) and minus (-) magnitudes are equal to within 2%. If the specimens do not show signs of leakage, they are subjected to a hydrostatic proof test.

## A7 Tensile Test

The significance of this test is to apply a tensile load at a controlled separation speed to establish how much load is needed to separate the test specimen.

## A8 Hydrostatic Burst Test

This test verifies the integrity of the pipe or tube and mechanically attached fitting joint to withstand, without leakage or burst, a minimum pressure equal to four times the rated pressure of the pipe or tube or mechanically attached fitting. To pass this test, the pipe or tube and mechanically attached fitting joint cannot leak or burst below four times the rated pressure.

## A9 Repeated Assembly Test

The significance of this test is to verify the integrity of the separable mechanically attached fitting joint to withstand ten repeated assemblies. The test specimens used for repeated assembly shall be selected from the impulse and flexure tests.

## A10 Rotary Flexure Test

This test determines the ability of separable mechanically attached fittings to withstand the effects of rotary flex while being pressurized. After completion of this test, the specimen is subjected to a hydrostatic proof test. This test is used to duplicate conditions that could occur during in-service use.

# Supplementary Tests

## S2 Thermal Cycling Test

This test determines the ability of mechanically attached fittings to withstand changes in temperature while being pressurized to the rated pressure.

### High-Temperature Thermal Cycling:

Size	Test Pressure psi (MPa)	Ambient Temp.	High Temp.	Number of Cycles	Hydrostatic Proof Test
1/4" ~1"	200 (1.38)	30 °C	260 °C	3	Pass



### Low-Temperature Thermal Cycling:

Size	Test Pressure psi (MPa)	Ambient Temp.	Low Temp.	Number of Cycles	Hydrostatic Proof Test
1/4" ~1"	200 (1.38)	25 °C	-18 °C	3	Pass



## S3 Elevated Temperature Soak Test

This test determines the ability of mechanically attached fittings to withstand a constant temperature level while being pressurized to the rated pressure.

1. Maintain the test specimens at the rated pressure and at the temperatures of 260 °C (500 °F), for a minimum of 100 h, in an air environment.
2. At the completion of 100 h, air-cool the test specimen to ambient temperature.
3. After ambient temperature is attained, subject the test specimens to a hydrostatic proof test.
4. Upon completion of the hydrostatic proof test, subject a minimum of two test specimens to a hydrostatic burst test.



Size	Test Pressure psi (MPa)	Elevated Temperature Soak Test		Hydrostatic Proof Test	Hydrostatic Burst Test
		Test Temp.	Duration (hr.)		
1/4" ~1"	250 (1.72)	260 °C	100	Pass	Pass



## S4 Stress-Corrosion Test

This test determines the ability of mechanically attached fittings to withstand the effects of corrosion while being subjected to a bending stress.

1. Install the test specimens in the test fixture. Apply a bending stress to the mechanically attached fittings.
2. Pressurize the test specimens to the rated pressure with water.
3. Subject the specimens to the standard salt spray test in accordance with test method B117 for 50 h.
4. After that, subject the specimens to a hydrostatic proof test.
5. Clean and examine the test specimens with 10X magnification.



## S5 Torsion Test

This test determines the ability of mechanically attached fittings to withstand displacement of the fittings and pipe or tube joint through the application of torque.

1. The spring-back position shows permanent angular deflection of the straight line, the line should deflect no less than 1.6 mm (0.0625 in.) at four pipe or tube diameters from near the end the mechanically attached fitting.
2. The tubes was rotated a minimum of 30° from the original position in the mechanically attached fitting.
3. The maximum torque was 542 N·m (400 ft-lbf), the test temperature was at room temperature.

## S6 High Impact Shock Test

This test verifies the ability of mechanically attached fittings to withstand a series of impacts while being pressurized to the rated pressure.

1. Mount the specimens on the impact shock test fixture and fill the specimens with liquid.
2. Pressurize the specimens to the rated pressure of the mechanically attached fittings.
3. With the specimens pressurized, subject it to impacts from hammer drop heights of 304.8 mm (1 ft), 914.4 mm (3 ft), and 1524 mm (5 ft). The test criteria shall be in conformance with MIL-S-901 (for Grade A, Class 1, Type A, lightweight hull-mounted equipment).
4. After completion of high-impact shock test, subject the specimens to a hydrostatic proof test followed by a burst test.



## S7 Fire Test

This test establishes a combined exposure of internal pressure and external heat flux to determine the ability of mechanically attached fittings to withstand a 30 min simulated fire condition.

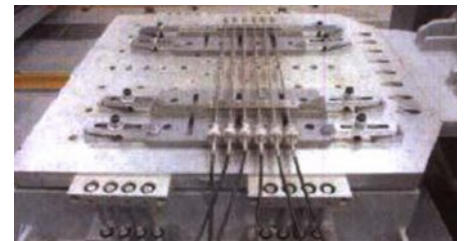
1. Attachment of the specimen to the fire test bench.
2. Pressurize the specimen with nitrogen (N<sub>2</sub>) or dry air to the rated pressure. Control the pressure of the gas as follows:
  - a. Before the fire exposure, precharge each specimen with an estimated mass of gas such that after 5 min the total pressure of expanding gas inside the heated specimen will reach 100 ±10% of the specimen test pressure.
  - b. During the first 5 min of fire exposure, allow specimen pressure to rise uncontrolled up to 110% of the test pressure.
  - c. After 5 min of the exposure, control specimen pressure to maintain 100 ± 5% of the test pressure until 20 min of fire exposure.
  - d. After 20 min of fire exposure, close the valves controlling specimen pressure to seal the specimen.
3. Expose each specimen in an environment meeting the fire requirements for 30 min. Immediately after completing the fire exposure, allow the specimen to cool to ambient temperature. Upon attaining room temperature, subject the specimen to a hydrostatic proof test.

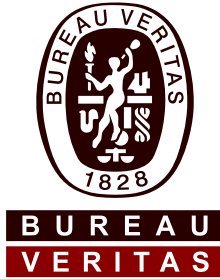


## S8 Vibration Test

This test establishes a combined exposure of internal pressure and external heat flux to determine the ability of mechanically attached fittings to withstand a 30 min simulated fire condition.

S8 Vibration Test	Frequency Range (Hz)	Amplitude	
		inch	mm
Samples shall be vibrated from 4 Hz to 60 Hz in 1 Hz increments at the amplitude show. At each frequency, the vibration shall be held for 5 minutes.	4~15	0.030±0.006	0.762±0.152
	16~25	0.020±0.004	0.508±0.102
	26~33	0.010±0.002	0.254±0.051
	34~40	0.005±0.001	0.127±0.025
	41~50	0.003±0.000	0.076±0.000
	51~60	0.002±0.000	0.051±0.000
Vibration in each of the three principle direction at 60 Hz for 2 hours.	60	0.002±0.000	0.051±0.000





## Inspection Certificate



**INSPECTION CERTIFICATE N°INS/S-GZ-13/185**

**BV Job Nr: INS/S-GZ-13/185**

<b>PROJECT:</b> <i>Third Party Inspection of Witness the testing process</i>	<b>Ref:</b> <i>INS/S-GZ-13/185</i>
<b>BV Client:</b> <i>FITOK GmbH</i>	<b>P/o nr:</b> <i>INS/S-GZ-13/185</i> <i>(client to BV)</i>
<b>Manufacturer:</b> <i>FITOK INCORPORATED (China)</i> <b>Add:</b> <i>Yingtailong industrial Park, Dalangstreet, Bao'an, Shenzhen, Guangdong 518109, China</i>	<b>P/o nr:/</b> <i>(client to Manufacturer)</i>
<b>Inspection requested by:</b> <i>FITOK GmbH</i>	

SUPPLY / SUBJECT OF INSPECTION	ITEM / TAG Nr	QTY
Stainless steel tube fittings	1/4"	66
	1/2"	66
	3/4"	66
	1"	66

**Scope of inspection:**

- **Particulars:** *(variations to the PO, items not inspected, total quantity, sampling, instruments...);*
- (1) BV scope of work:

Witness the testing process A2, A3, A4, A5, A6, A7, A8, A9, A10, S2 &S3 listed in the contract and relevant standard.

(2) When BV inspector arrived on site, the samples of the fittings had been prepared and ready for testing. Details mentioned above.

- 1) BV inspector witnessed the test A2 (EXAMINATION OF SPECIMEN), and found acceptable according the relevant standard. Details refer to the annex testing report.
- 2) BV inspector witnessed the test A3 (PNEUMATIC PROOF TESTING), and found acceptable according the relevant standard. Details refer to the annex testing report.
- 3) BV inspector witnessed the test A4 (HYDROSTATIC PROOF TESTING), and found acceptable according the relevant standard. Details refer to the annex testing report.
- 4) BV inspector witnessed the test A5 (IMPULSE TESTING), and found acceptable according the relevant standard. Details refer to the annex testing report.
- 5) BV inspector witnessed the test A6 (FLEXURE FATIGUE TEST), and found acceptable according the relevant standard. Details refer to the annex testing report.
- 6) BV inspector witnessed the test A7 (TENSILE TEST), and found acceptable according the relevant standard. Details refer to the annex testing report.
- 7) BV inspector witnessed the test A8 (HYDROSTATIC BURST TEST), and found acceptable according the relevant standard. Details refer to the annex testing report.
- 8) BV inspector witnessed the test A9 (REPEATED ASSEMBLY TEST), and found acceptable according the relevant standard. Details refer to the annex testing report.





**INSPECTION CERTIFICATE N°INS/S-GZ-13/185**

**BV Job Nr: INS/S-GZ-13/185**

- 9) BV inspector witnessed the test A10 (ROTARY FLEX TEST), and found acceptable according the relevant standard. Details refer to the annex testing report.
- 10) BV inspector witnessed the test S2 (THERMAL CYCLING TEST), and found acceptable according the relevant standard. Details refer to the annex testing report.
- 11) BV inspector witnessed the test S3 (ELEVATED TEMPERATURE SOAK TEST), and found acceptable according the relevant standard. Details refer to the annex testing report.

➤ Reference documents used for inspection: (list with revision numbers):

Title	Reference n°	Rev.	Approved by	Date
Standard Specification for Performance of Piping and Tubing Mechanically Attached Fittings	ASTM F 1387	1999+ reapproved 2005	ASTM	2005
Testing specification	/	/	Client	/
Contract	INS/S-GZ-13/185	0	Client	2013-09-04

- Place of inspection & date or period:  
Inspection Place: Shenzhen City, Guangdong Province, China.  
Inspection Date: Sep. 22- Oct. 25, 2013
- Marking and stamping: (type and location):  
N/A
- Annexes to this certificate: (Total number of pages):  
ASTM F1387 Test Report (total 49 pages)

*The undersigned, inspector to Bureau Veritas, certifies that the hereabove mentioned supply was inspected in conformity with the applicable requirements of the purchase order and the contractual requirements governing the mission entrusted to Bureau Veritas without any remarks.*

**Inspected by:**  
Name: Jian Ding

Signature:

Date of issue: Nov. 04, 2013

**Inspection centre:** BV Guangzhou



**Checked by:...**  
Name: Qi Wang

Signature:



Distribution:  CLIENT     MANUFACTURER





## INSPECTION CERTIFICATE Nr INS-HN-17-181-IC-01

**BV Job Nr: INS-HN-17-181**

<b>PROJECT:</b> <i>Witness of Testing Process of Tube Fittings</i>	<b>Ref:</b> <i>INS-HN-17-181</i>
<b>BV Client:</b> <i>FITOK GmbH</i>	<b>P/o nr:</b> <i>(client to BV)</i>
<b>Manufacturer:</b> <i>FITOK Incorporated</i>	<b>P/o nr:</b> <i>(client to Manufacturer)</i>
<b>Inspection requested by:</b> <i>FITOK GmbH</i>	

SUPPLY / SUBJECT OF INSPECTION	ITEM / TAG Nr	QTY
<i>Tube fittings</i>	<i>1/4"</i>	<i>6pcs</i>
	<i>1/2"</i>	<i>6pcs</i>
	<i>3/4"</i>	<i>6pcs</i>
	<i>1"</i>	<i>6pcs</i>



**Scope of inspection:**

- **Particulars:** *(variations to the PO, items not inspected, sampling, instruments...):*
  - (1) BV work scope:
    - ① Witness the testing process S4(Stress Corrosion test) listed in the contract and relative standards.
    - ② Witness the testing process A4(Hydrostatic proof test) listed in relative standard.
  - (2) When BV inspector arrived at the site, the samples of testing fittings had been prepared and ready for test. Details mentioned above.
    - ① BV inspector witnessed the test S4(Stress Corrosion test), and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-001, Total 60 pages) Part of S4 Stress Corrosion Test.
    - ② BV inspector witnessed the test A4(Hydrostatic Proof test), and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-001, Total 60 pages)-Part of A4 Hydrostatic Proof Test.
- **Reference documents used for inspection:** *(list with revision numbers):*

Title	Reference n°	Rev.	Approved by	Date
P/O Requirement	-	-	BV/Client	2017-11-03
Standard Specification for Performance of Piping and Tubing Mechanically Attached Fittings	ASTM F 1387	-	ASTM	2005

- **Place of inspection & date or period:**  
 Inspection place: Shenzhen City, Guangdong Province, P. R. China.  
 Inspection date: Nov 24~27, 2017.
- **Marking and stamping:** *(type and location):*  
 N/A

➤ Annexes to this certificate: (Total number of pages):  
ASTM F 1387 Test Report (FITOK-F1387TR-001, Total 60 pages)

*The undersigned, inspector to Bureau Veritas, certifies that the hereabove mentioned supply was inspected in conformity with the applicable requirements of the purchase order and the contractual requirements governing the mission entrusted to Bureau Veritas without any remarks.*

**Inspected by:** Youguo Wang

**Checked by:** Evan Wen

Name:...

Signature:

*Youguo Wang*



Name:...

Signature:

*Evan\_wen* ...

Date of issue: 2017-11-28

**Inspection centre:** BVQS Guangzhou

Distribution:  CLIENT

MANUFACTURER





## INSPECTION CERTIFICATE Nr INS/SR/S-22/095-01

**BV Job Nr: INS/SR/S-22/095**

<b>PROJECT: Witness of Testing Process of Tube Fittings</b>	<b>Ref: INS/SR/S-22/095</b>
<b>BV Client: FITOK GmbH</b>	<b>P/o nr: INS/SR/S-22/095</b> <i>(client to BV)</i>
<b>Manufacturer: FITOK Incorporated</b>	<b>P/o nr: N/A</b> <i>(client to Manufacturer)</i>
<b>Inspection requested by: FITOK GmbH</b>	

SUPPLY / SUBJECT OF INSPECTION	ITEM / TAG Nr	QTY
Tube fittings, 4200psi / 28.9Mpa	1" * 0.109"	6+6pcs
Tube fittings, 4200psi / 28.9Mpa	3/4" * 0.083"	6+6pcs
Tube fittings, 5100psi / 35.1Mpa	1/2" * 0.065"	6+6pcs
Tube fittings, 7500psi / 51.7Mpa	1/4" * 0.049"	6+6pcs

### Scope of inspection:

➤ **Particulars:** *(variations to the PO, items not inspected, sampling, instruments...):*

(1) BV work scope:

- ① Witness the testing process of High Impact Shock Test -S6 listed in the contract and relative standards.
- ② Witness the testing process of Hydrostatic Proof test -A4 listed in relative standard.
- ③ Witness the testing process of Hydrostatic Burst Test -A8 listed in relative standard.
- ④ Witness the testing process of Torsion Test -S5 listed in relative standard.
- ⑤ Witness the testing process of Hydrostatic Proof test -A4 listed in relative standard.

(2) When BV inspector arrived at the site, the samples of testing fittings had been prepared and ready for test. Details mentioned above.

- ① BV inspector witnessed the test High Impact Shock Test -S6, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages) Part of High Impact Shock Test -S6.
- ② BV inspector witnessed the Hydrostatic Proof test -A4, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages)-Part of Hydrostatic Proof test -A4.
- ③ BV inspector witnessed the Hydrostatic Burst Test -A8, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages)-Part of Hydrostatic Burst Test -A8.
- ④ BV inspector witnessed the Torsion Test -S5, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages)-Part of Torsion Test -S5.
- ⑤ BV inspector witnessed the Hydrostatic Proof test -A4, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages)-Part of Hydrostatic Proof test -A4.

➤ **Reference documents used for inspection:** *(list with revision numbers):*

Title	Reference n°	Rev.	Approved by	Date
P/O Requirement	-	-	Client	2023-03-07
Standard Specification for Performance of Piping and Tubing Mechanically Attached Fittings	ASTM F 1387	-	ASTM	2012
Military Specification	MIL-S-901	D	MIL	1989

➤ **Place of inspection & date or period:**

Inspection place: Guangzhou & Shenzhen City, Guangdong Province, P. R. China.  
Inspection date: Mar. 9~10 & 13th, 2023.

➤ **Marking and stamping:** *(type and location):*

N/A

➤ **Annexes to this certificate:** *(Total number of pages):*

ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages)

**The undersigned, inspector to Bureau Veritas, certifies that the hereabove mentioned supply was inspected in conformity with the applicable requirements of the purchase order and the contractual requirements governing the mission entrusted to Bureau Veritas without any remarks.**

**Inspected by:**

Name: Youguo Wang

Signature: *Youguo Wang*

Date of issue: 2023-03-15



**Checked by:**

Name: Chunjie Xu

Signature: *Chunjie Xu*

**Inspection centre:** BVQS Shanghai

Distribution:  CLIENT  MANUFACTURER



## INSPECTION CERTIFICATE Nr INS/SR/S-22/095-04

**BV Job Nr: INS/SR/S-22/095**

<b>PROJECT: Witness of Testing Process of Tube Fittings</b>	<b>Ref: INS/SR/S-22/095</b>
<b>BV Client: FITOK GmbH</b>	<b>P/o nr: INS/SR/S-22/095</b> <i>(client to BV)</i>
<b>Manufacturer: FITOK Incorporated</b>	<b>P/o nr: N/A</b> <i>(client to Manufacturer)</i>
<b>Inspection requested by: FITOK GmbH</b>	

SUPPLY / SUBJECT OF INSPECTION	ITEM / TAG Nr	QTY
Tube fittings, 6500psi / 44.8Mpa (316 Tube+2507 Fitting)	3/8" * 0.065"	6+6pcs
Tube fittings, 6500psi / 44.8Mpa (316 Tube+ Alloy 825 Fitting)	3/8" * 0.065"	6+6pcs
Tube fittings, 4000psi / 27.6Mpa (316 Tube+316 Fitting)	1/4" * 0.028"	6+6pcs
Tube fittings, 10200psi / 70.3Mpa(316 Tube+316 Fitting)	1/4" * 0.065"	6+6pcs

### Scope of inspection:

➤ **Particulars:** *(variations to the PO, items not inspected, sampling, instruments...):*

(1) BV work scope:

- ① Witness the testing process of High Impact Shock Test -S6 listed in the contract and relative standards.
- ② Witness the testing process of Hydrostatic Proof test -A4 listed in relative standard.
- ③ Witness the testing process of Hydrostatic Burst Test -A8 listed in relative standard.
- ④ Witness the testing process of Torsion Test -S5 listed in relative standard.
- ⑤ Witness the testing process of Hydrostatic Proof test -A4 listed in relative standard.

(2) When BV inspector arrived at the site, the samples of testing fittings had been prepared and ready for test. Details mentioned above.

- ① BV inspector witnessed the test High Impact Shock Test -S6, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-003, total 14 pages) Part of High Impact Shock Test -S6.
- ② BV inspector witnessed the Hydrostatic Proof test -A4, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-003, total 14 pages)-Part of Hydrostatic Proof test -A4.
- ③ BV inspector witnessed the Hydrostatic Burst Test -A8, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-003, total 14 pages)-Part of Hydrostatic Burst Test -A8.
- ④ BV inspector witnessed the Torsion Test -S5, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-003, total 14 pages)-Part of Torsion Test -S5.
- ⑤ BV inspector witnessed the Hydrostatic Proof test -A4, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-003, total 14 pages)-Part of Hydrostatic Proof test -A4.

➤ Reference documents used for inspection: (list with revision numbers):

Title	Reference n°	Rev.	Approved by	Date
P/O Requirement	-	-	Client	2023-03-07
Standard Specification for Performance of Piping and Tubing Mechanically Attached Fittings	ASTM F 1387	-	ASTM	2012
Military Specification	MIL-S-901	D	MIL	1989

➤ Place of inspection & date or period:

Inspection place: Guangzhou & Shenzhen City, Guangdong Province, P. R. China.  
Inspection date: April 11 & 12, 2023.

➤ Marking and stamping: (type and location):

N/A

➤ Annexes to this certificate: (Total number of pages):

ASTM F 1387 Test Report (FITOK-F1387TR-003, total 14 pages)

**The undersigned, inspector to Bureau Veritas, certifies that the hereabove mentioned supply was inspected in conformity with the applicable requirements of the purchase order and the contractual requirements governing the mission entrusted to Bureau Veritas without any remarks.**

**Inspected by:**

Name: *Shumin Chen*

Signature: *Chen Shumin*

Date of issue: 2023-04-13



**Checked by:**

Name: *Chunjie Xu*

Signature: *Chunjie Xu*

**Inspection centre:** BVQS Shanghai

Distribution:  CLIENT  MANUFACTURER



## INSPECTION CERTIFICATE Nr INS/SR/S-22/095-03

**BV Job Nr: INS/SR/S-22/095**

<b>PROJECT: Witness of Testing Process of Tube Fittings</b>	<b>Ref: INS/SR/S-22/095</b>
<b>BV Client: FITOK GmbH</b>	<b>P/o nr: INS/SR/S-22/095</b> <i>(client to BV)</i>
<b>Manufacturer: FITOK Incorporated</b>	<b>P/o nr: N/A</b> <i>(client to Manufacturer)</i>
<b>Inspection requested by: FITOK GmbH</b>	

SUPPLY / SUBJECT OF INSPECTION	ITEM / TAG Nr	QTY
Tube fittings, 10000psi / 69Mpa	3/4" * 0.095	6pcs
Tube fittings, 12700psi / 87.6Mpa	3/8" * 0.065	6pcs

### Scope of inspection:

➤ **Particulars:** (*variations to the PO, items not inspected, sampling, instruments...*):

(1) BV work scope:

- ① Witness the testing process of High Impact Shock Test -S6 listed in the contract and relative standards.
- ② Witness the testing process of Hydrostatic Proof test -A4 listed in relative standard.
- ③ Witness the testing process of Hydrostatic Burst Test -A8 listed in relative standard.
- ④ Witness the testing process of Torsion Test -S5 listed in relative standard.
- ⑤ Witness the testing process of Hydrostatic Proof test -A4 listed in relative standard.

(2) When BV inspector arrived at the site, the samples of testing fittings had been prepared and ready for test. Details mentioned above.

- ① BV inspector witnessed the test High Impact Shock Test -S6, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-004, total 13 pages) Part of High Impact Shock Test -S6.
- ② BV inspector witnessed the Hydrostatic Proof test -A4, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-004, total 13 pages)-Part of Hydrostatic Proof test -A4.
- ③ BV inspector witnessed the Hydrostatic Burst Test -A8, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-004, total 13 pages)-Part of Hydrostatic Burst Test -A8.
- ④ BV inspector witnessed the Torsion Test -S5, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-004, total 13 pages)-Part of Torsion Test -S5.
- ⑤ BV inspector witnessed the Hydrostatic Proof test -A4, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-004, total 13 pages)-Part of Hydrostatic Proof test -A4.

➤ **Reference documents used for inspection:** (list with revision numbers):

Title	Reference n°	Rev.	Approved by	Date
P/O Requirement	-	-	Client	2023-03-07
Standard Specification for Performance of Piping and Tubing Mechanically Attached Fittings	ASTM F 1387	-	ASTM	2012
Military Specification	MIL-S-901	D	MIL	1989

➤ **Place of inspection & date or period:**

Inspection place: Guangzhou & Shenzhen City, Guangdong Province, P. R. China.  
Inspection date: June 15 & 16, 2023.

➤ **Marking and stamping:** (type and location):

N/A

➤ **Annexes to this certificate:** (Total number of pages):

ASTM F 1387 Test Report (FITOK-F1387TR-004, total 13 pages)

The undersigned, inspector to Bureau Veritas, certifies that the hereabove mentioned supply was inspected in conformity with the applicable requirements of the purchase order and the contractual requirements governing the mission entrusted to Bureau Veritas without any remarks.

**Inspected by:**

Name: *Xikang WU*

Signature: *Wu Xikang*

Date of issue: 2023-06-17



**Checked by:**

Name: *Chunjie Xu*

Signature: *Chunjie Xu*

**Inspection centre:** BVQS Shanghai

Distribution:  CLIENT  MANUFACTURER





## INSPECTION CERTIFICATE Nr INS/SR/S-22/095-02

**BV Job Nr: INS/SR/S-22/095**

<b>PROJECT: Witness of Testing Process of Tube Fittings</b>	<b>Ref: INS/SR/S-22/095</b>
<b>BV Client: FITOK GmbH</b>	<b>P/o nr: INS/SR/S-22/095</b> <i>(client to BV)</i>
<b>Manufacturer: FITOK Incorporated</b>	<b>P/o nr: N/A</b> <i>(client to Manufacturer)</i>
<b>Inspection requested by: FITOK GmbH</b>	

SUPPLY / SUBJECT OF INSPECTION	ITEM / TAG Nr	QTY
Tube fittings, 10100psi / 69.7MP (2507 Tube+2507 Fitting)	1/2" * 0.065"	6+6pcs
Tube fittings, 6500psi / 44.8Mpa (316 Tube+ Alloy 825 Fitting)	3/8" * 0.065"	6+0pcs
Tube fittings, 10200psi / 70.3Mpa (316 Tube+316 Fitting)	1/4" * 0.065"	6+0pcs

### Scope of inspection:

➤ **Particulars:** (*variations to the PO, items not inspected, sampling, instruments...*):

(1) BV work scope:

- ① Witness the testing process of High Impact Shock Test -S6 listed in the contract and relative standards.
- ② Witness the testing process of Hydrostatic Proof test -A4 listed in relative standard.
- ③ Witness the testing process of Hydrostatic Burst Test -A8 listed in relative standard.
- ④ Witness the testing process of Torsion Test -S5 listed in relative standard.
- ⑤ Witness the testing process of Hydrostatic Proof test -A4 listed in relative standard.

(2) When BV inspector arrived at the site, the samples of testing fittings had been prepared and ready for test. Details mentioned above.

- ① BV inspector witnessed the test High Impact Shock Test -S6, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages) Part of High Impact Shock Test -S6.
- ② BV inspector witnessed the Hydrostatic Proof test -A4, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages)-Part of Hydrostatic Proof test -A4.
- ③ BV inspector witnessed the Hydrostatic Burst Test -A8, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages)-Part of Hydrostatic Burst Test -A8.
- ④ BV inspector witnessed the Torsion Test -S5, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages)-Part of Torsion Test -S5.
- ⑤ BV inspector witnessed the Hydrostatic Proof test -A4, and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages)-Part of Hydrostatic Proof test -A4.

➤ **Reference documents used for inspection:** (list with revision numbers):

Title	Reference n°	Rev.	Approved by	Date
P/O Requirement	-	-	Client	2023-03-07
Standard Specification for Performance of Piping and Tubing Mechanically Attached Fittings	ASTM F 1387	-	ASTM	2012
Military Specification	MIL-S-901	D	MIL	1989

➤ **Place of inspection & date or period:**

Inspection place: Guangzhou & Shenzhen City, Guangdong Province, P. R. China.  
Inspection date: May 20<sup>th</sup>, 2023.

➤ **Marking and stamping:** (type and location):

N/A

➤ **Annexes to this certificate:** (Total number of pages):

ASTM F 1387 Test Report (FITOK-F1387TR-002, total 14 pages)

*The undersigned, inspector to Bureau Veritas, certifies that the hereabove mentioned supply was inspected in conformity with the applicable requirements of the purchase order and the contractual requirements governing the mission entrusted to Bureau Veritas without any remarks.*

**Inspected by:**

Name: Yihao Qian

Signature: *Qianyi Hao*

Date of issue: 2023-05-21

**Inspection centre:** BVQS Shanghai



**Checked by:**

Name: Chunjie Xu

Signature: *Chunjie Xu*

Distribution:  CLIENT  MANUFACTURER



## INSPECTION CERTIFICATE Nr INS/ER/SHOP-23/178-01

**BV Job Nr: INS/ER/SHOP-23/178**

<b>PROJECT:</b> <i>Witness of Testing Process of Tube Fittings</i>	<b>Ref:</b> <i>INS/ER/SHOP-23/178-01</i>
<b>BV Client:</b> <i>Wenzhou Haichuan Inspection Co., Ltd</i>	<b>P/o nr:</b> <i>INS/ER/SHOP-23/178</i> <i>(client to BV)</i>
<b>Manufacturer:</b> <i>FITOK GmbH, FITOK Incorporated</i>	<b>P/o nr:</b> <i>N/A</i> <i>(client to Manufacturer)</i>
<b>Inspection requested by:</b> <i>FITOK GmbH, FITOK Incorporated</i>	

SUPPLY / SUBJECT OF INSPECTION	Specimens No.	QTY
6D Series Double Ferrules Tube Fittings 1/4"x0.049" material SS316 rated pressure: 43.87 MPa	FA18011-4	6 sets
6D Series Double Ferrules Tube Fittings 1/2"x0.065" material SS316 rated pressure: 27.53 MPa	FA18011-1	6 sets
6D Series Double Ferrules Tube Fittings 3/4"x0.083" material SS316 rated pressure: 24.53 MPa	FA18011-3	6 sets
6D Series Double Ferrules Tube Fittings 1" x0.095" material SS316 rated pressure: 21.05 MPa	FA18011-2	6 sets

### Scope of inspection:

➤ **Particulars:** *(variations to the PO, items not inspected, sampling, instruments...):*

(1) BV work scope:

- ① Witness the testing process of Fire Test -S7 listed in the contract and relative standards.
- ② Witness the testing process of Hydrostatic Proof test -A4 listed in relative standard.

(2) When BV inspector arrived at the TPI lab, all specimen products had been assembled and transferred to the TPI lab and ready for the test.

- ① BV inspector witnessed the testing process of Fire Test -S7, and test result was found acceptable according to relevant standards.
- ② BV inspector witnessed the Hydrostatic Proof test -A4, and test result was found acceptable according to relevant standards.

The details refer to the ANNEX of ASTM F 1387 Test Report (LSV2023FA18011-1~4, total 24 pages) and inspection report (IR- INS/ER/SHOP-23/178-01, 8Pages) .

➤ **Reference documents used for inspection:** *(list with revision numbers):*

Title	Reference n°	Rev.	Approved by	Date
Standard Specification for Performance of Piping and Tubing Mechanically Attached Fittings	ASTM F 1387	-	ASTM	July 1,2023

➤ Place of inspection & date or period:

Building 1, Block 3, Wanyang Zhongchuang City, Bihu Town, Liandu District, Lishui City, Zhejiang Province

Inspection date: Sep.27~28th, 2023.

➤ Marking and stamping: (type and location):

N/A

➤ Annexes to this certificate: (Total number of pages):

Inspection report (IR- INS/ER/SHOP-23/178-01, 8Pages ) and ASTM F 1387 test report (LSV2023FA18011-1~4, 24Pages)

*The undersigned, inspector to Bureau Veritas, certifies that the hereabove mentioned supply was inspected in conformity with the applicable requirements of the purchase order and the contractual requirements governing the mission entrusted to Bureau Veritas without any remarks.*

**Inspected by:**

Name: Zhang Xiaoyong

Signature: *Zhang Xiaoyong*

Date of issue: 2023-12-18

**Inspection centre:** BVQS Shanghai



**Checked by:**

Name: Chunjie. Xu

Signature: *Chunjie Xu*

Distribution:  CLIENT

MANUFACTURER



## INSPECTION CERTIFICATE Nr INS-S-GZ-16-015

**BV Job Nr: INS-S-GZ-16-015**

<b>PROJECT:</b> <i>Witness of Testing Process of Tube Fittings</i>	<b>Ref:</b> <i>INS-S-GZ-16-015</i>
<b>BV Client:</b> <i>FITOK GmbH</i>	<b>P/o nr:</b> <i>(client to BV)</i>
<b>Manufacturer:</b> <i>FITOK Incorporated</i>	<b>P/o nr:</b> <i>(client to Manufacturer)</i>
<b>Inspection requested by:</b> <i>FITOK GmbH</i>	

SUPPLY / SUBJECT OF INSPECTION	ITEM / TAG Nr	QTY
<i>Tube fittings</i>	<i>1/4"</i>	<i>6pcs</i>
	<i>1/2"</i>	<i>6pcs</i>
	<i>3/4"</i>	<i>6pcs</i>
	<i>1"</i>	<i>6pcs</i>

**Scope of inspection:**

➤ Particulars: *(variations to the PO, items not inspected, sampling, instruments...):*

(1) BV work scope:

- ① Witness the testing process S8(Vibration test) listed in the contract and relative standards.
- ② Witness the testing process A4(Hydrostatic proof test) listed in relative standard.

(2) When BV inspector arrived at the site, the samples of testing fittings had been prepared and ready for test. Details mentioned above.

- ① BV inspector witnessed the test S8(Vibration test), and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of Vibration Test Report(QSZ-16JA0080MTGC, Total 12 pages).
- ② BV inspector witnessed the test A4(Hydrostatic Proof test), and test result was found acceptable according to relevant standards. The Details refer to the ANNEX of ASTM F 1387 Test Report (FITOK-F1387TR-001, Total 55 pages)-Part of A4 Hydrostatic Proof Test.

➤ Reference documents used for inspection: *(list with revision numbers):*

Title	Reference n°	Rev.	Approved by	Date
Test Request Form	-	-	Manufacturer	2016-1-25
Standard Specification for Performance of Piping and Tubing Mechanically Attached Fittings	ASTM F 1387	-	ASTM	2005

➤ Place of inspection & date or period:

Inspection place: *Guangzhou City, Guangdong Province, P. R. China.*

Inspection date: *Jan 26~Feb 25, 2016.*

➤ Marking and stamping: *(type and location):*

*N/A*

ASTM F 1387 Test Report (FITOK-F1387TR-001, Total 55 pages)  
Vibration Test Report (QSZ-16JA0080MTGC, Total 12 pages)

*The undersigned, inspector to Bureau Veritas, certifies that the hereabove mentioned supply was inspected in conformity with the applicable requirements of the purchase order and the contractual requirements governing the mission entrusted to Bureau Veritas without any remarks.*

**Inspected by:** Youguo Wang

**Checked by:** Qi Wang



Name: ... Signature: *Youguo Wang* ...

Name: ... Signature: *Qi Wang* ...

Date of issue: 2016-02-29

**Inspection centre:** BVQS Guangzhou

Distribution:  CLIENT  MANUFACTURER