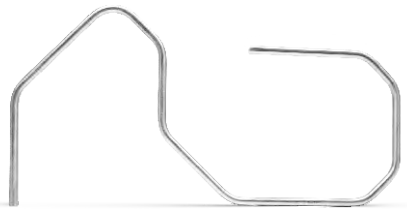
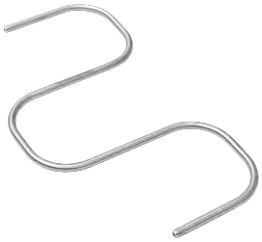
FITOK

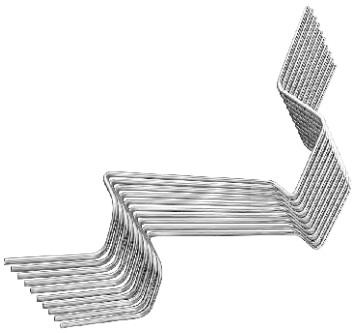
CUSTOM TUBE BENDING SERVICES

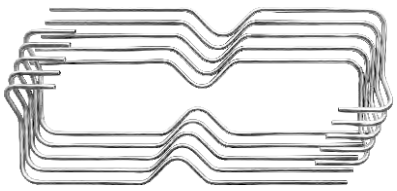
Specialized Products and Services Meeting Your Diverse Custom Needs

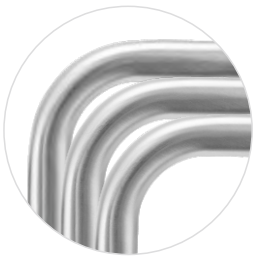
Products

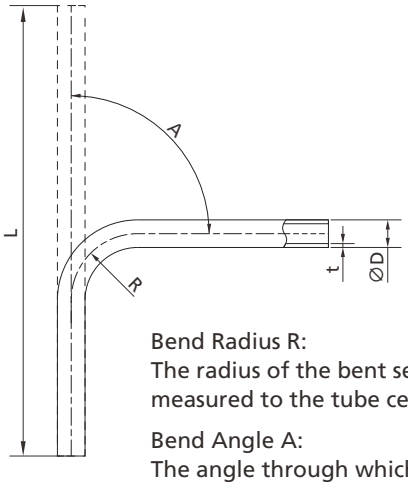




Supply Range and Parameters



Bend Radius R:
The radius of the bent section of a tube, measured to the tube centerline.

Bend Angle A:
The angle through which the tube is bent.

Straight Tubing Length L:
The tube length prior to bending.

Bend Radius

Standard bend radius is recommended. For products with other bend radii, please consult FITOK.

Working Pressure

For instrumentation and high purity tube bending products with bend radii greater than 1.5 times the tube O.D., the working pressure is the same as for straight tubing.

For medium and high pressure tube bending products with standard bend radii, refer to the table below for working pressure ratings. For tube bending products with other bend radii, please consult FITOK.

Instrumentation and High Purity Tube Bending

Fractional

Material	Straight Tubing Series	O.D. ØD (in.)	Wall Thickness t (in.)	Standard Bend Radius R (in.)	Minimal Bend Radius Rmin. (in.)	Maximum Bend Angle A	Maximum Straight Tubing Length Lmax. (ft)	Packaging and Cleaning Standard
316/316L SS, Enhanced 316/316L SS, Super Duplex SS, and Alloys	TMP, TBA	1/8	0.028, 0.035	0.38	1.5×O.D.	180°	9.1	FITOK Standard Cleaning and Packaging Process (FC-01), Special Cleaning and Packaging Process (FC-02) options
		3/16	0.028, 0.035, 0.049	0.56				
		1/4	0.035, 0.049, 0.065	0.56				
		3/8	0.049, 0.065, 0.083	0.81				
		1/2	0.049, 0.065, 0.083	1.00				
		5/8	0.065, 0.083, 0.095	1.25				
		3/4	0.065, 0.083, 0.095, 0.109	1.50				
		1	0.083, 0.095, 0.109, 0.12	2.00				

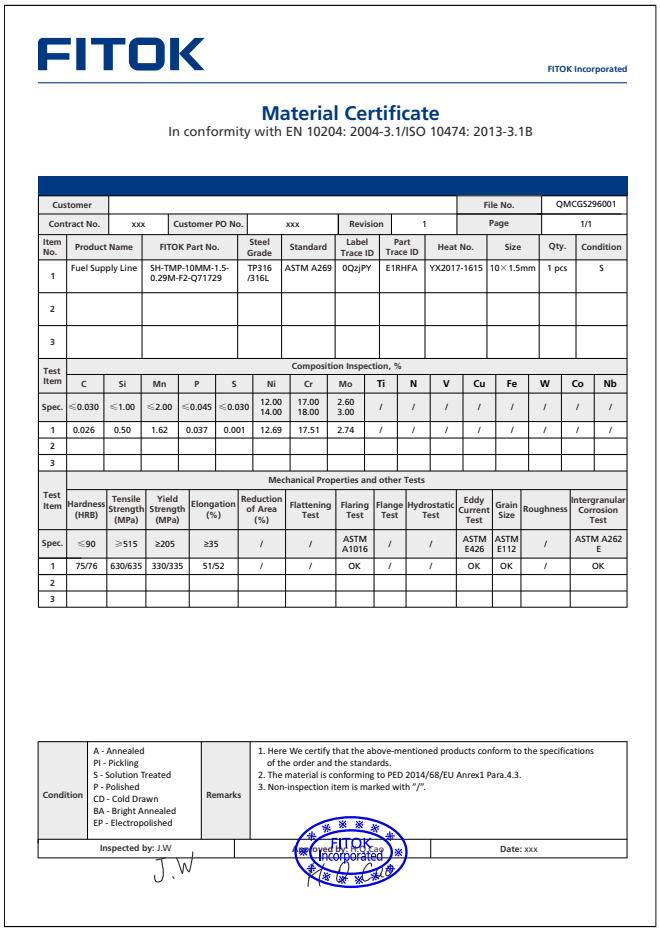
Metric

Material	Straight Tubing Series	O.D. ØD (mm)	Wall Thickness t (mm)	Standard Bend Radius R (mm)	Minimal Bend Radius Rmin. (mm)	Maximum Bend Angle A	Maximum Straight Tubing Length Lmax. (m)	Packaging and Cleaning Standard
316/316L SS, Enhanced 316/316L SS, Super Duplex SS, and Alloys	TMP, TBA	3	0.8, 1	10	1.5×O.D.	180°	2.8	FITOK Standard Cleaning and Packaging Process (FC-01), Special Cleaning and Packaging Process (FC-02) options
		6	1, 1.2, 1.5	15				
		8	1, 1.2, 1.5	20				
		10	1.2, 1.5, 2	20				
		12	1.5, 2, 2.5	25				
		14	1.5, 2, 2.5, 3	30				
		16	1.5, 2, 2.5, 3	30				
		18	1.5, 2, 2.5, 3	35				
		20	2, 2.5, 3	40				
		22	2, 2.5, 3, 4	45				
		25	2, 2.5, 3, 4	50				

Medium and High Pressure Tube Bending

Fractional								
Material	Straight Tubing Series	O.D. ØD (in.)	I.D. t (in.)	Standard Bend Radius R (in.)	Max Working Pressure psig (bar)	Maximum Bend Angle A	Maximum Straight Tubing Length Lmax. (ft)	Packaging and Cleaning Standard
316/316L SS, Enhanced 316/316L SS	T20D	1/4	0.120	1.25	19100 (1317)	180°	9.1	FITOK Standard Cleaning and Packaging Process (FC-01), Special Cleaning and Packaging Process (FC-02) options
		3/8	0.209	1.75	18750 (1293)			
		1/2	0.282	2.63	18750 (1293)			
		3/4	0.420	3.50	18750 (1293)			
		1	0.656	4.63	18700 (1290)			
	T20M	1/4	0.109	1.25	19100 (1317)			
		3/8	0.203	1.75	18750 (1293)			
		9/16	0.312	2.63	18750 (1293)			
		3/4	0.438	3.50	18750 (1293)			
		1	0.562	4.63	18700 (1290)			
	T60H	1/4	0.083	1.25	58400 (4028)			
		3/8	0.125	1.75	57750 (3983)			
		9/16	0.188	2.63	57750 (3983)			

Test Report Available Upon Request



FITOK

FITOK Incorporated

Material Certificate

In conformity with EN 10204: 2004-3.1/ISO 10474: 2013-3.1B

Customer										File No.		QMCG5296001			
Contract No.	xxx	Customer PO No.		xxx		Revision	1			Page		1/1			
Item No.	Product Name	FITOK Part No.		Steel Grade	Standard	Label Trace ID	Part Trace ID	Heat No.		Size		Qty.	Condition		
1	Fuel Supply Line	SH-TMP-10MM-1.5-0.29M-F2-Q71729		TP316 /316L	ASTM A269	0QzjPY	E1RHFA	YX2017-1615		10×1.5mm		1 pcs	S		
2															
3															

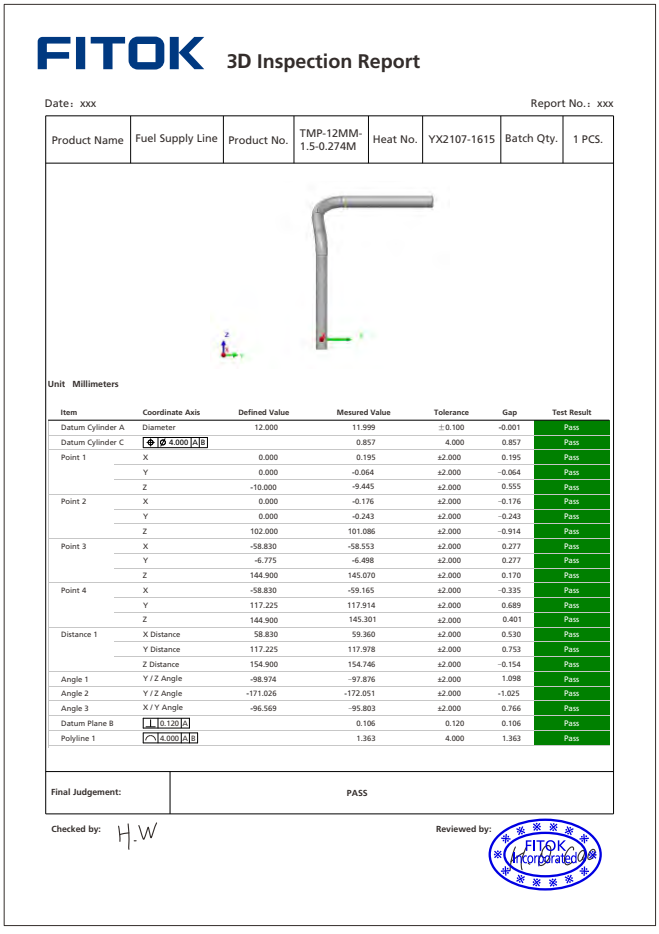
Test Item	Composition Inspection, %														
	C	Si	Mn	P	S	Ni	Cr	Mo	Ti	N	V	Cu	Fe	W	Co	Nb
Spec.	≤0.030	≤1.00	≤2.00	≤0.045	≤0.030	12.00 14.00	17.00 18.00	2.60 3.00	/	/	/	/	/	/	/	/
1	0.026	0.50	1.62	0.037	0.001	12.69	17.51	2.74	/	/	/	/	/	/	/	/
2																
3																

Test Item	Mechanical Properties and other Tests											
	Hardness (HRB)	Tensile Strength (MPa)	Yield Strength (MPa)	Elongation (%)	Reduction of Area (%)	Flattening Test	Flaring Test	Flange Test	Hydrostatic Test	Eddy Current Test	Grain Size	Roughness	Intergranular Corrosion Test
Spec.	≤90	≥515	≥205	≥35	/	/	ASTM A1016	/	/	ASTM E426	ASTM E112	/	ASTM A262 E
1	75/76	630/635	330/335	51/52	/	/	OK	/	/	OK	OK	/	OK
2													
3													

Condition	Remarks
A - Annealed PI - Pickling S - Solution Treated P - Polished CD - Cold Drawn BA - Bright Annealed EP - Electropolished	1. Here We certify that the above-mentioned products conform to the specifications of the order and the standards. 2. The material is conforming to PED 2014/68/EU Anrex1 Para.4.3. 3. Non-inspection item is marked with "/".

Inspected by: J.W | Approved by: [illegible] | Date: xxx

EN 10204: 2004-3.1 Material Certificate



FITOK **3D Inspection Report**

Date: xxx | Report No.: xxx

Product Name	Fuel Supply Line	Product No.	TMP-12MM-1.5-0.274M	Heat No.	YX2107-1615	Batch Qty.	1 PCS.

Unit Millimeters

Item	Coordinate Axis	Defined Value	Mesured Value	Tolerance	Gap	Test Result
Datum Cylinder A	Diameter	12.000	11.999	±0.100	-0.001	Pass
Datum Cylinder C	⌖ Ø 4.000 A B		0.857	4.000	0.857	Pass
Point 1	X	0.000	0.195	±2.000	0.195	Pass
	Y	0.000	-0.064	±2.000	-0.064	Pass
	Z	-10.000	-9.445	±2.000	0.555	Pass
Point 2	X	0.000	-0.176	±2.000	-0.176	Pass
	Y	0.000	-0.243	±2.000	-0.243	Pass
	Z	102.000	101.086	±2.000	-0.914	Pass
Point 3	X	-58.830	-58.553	±2.000	0.277	Pass
	Y	-6.775	-6.498	±2.000	0.277	Pass
	Z	144.900	145.070	±2.000	0.170	Pass
Point 4	X	-58.830	-59.165	±2.000	-0.335	Pass
	Y	117.225	117.914	±2.000	0.689	Pass
	Z	144.900	145.301	±2.000	0.401	Pass
Distance 1	X Distance	58.830	59.360	±2.000	0.530	Pass
	Y Distance	117.225	117.978	±2.000	0.753	Pass
	Z Distance	154.900	154.746	±2.000	-0.154	Pass
Angle 1	Y / Z Angle	-98.974	-97.876	±2.000	1.098	Pass
Angle 2	Y / Z Angle	-171.026	-172.051	±2.000	-1.025	Pass
Angle 3	X / Y Angle	-96.569	-95.803	±2.000	0.766	Pass
Datum Plane B	⊥ 0.120 A		0.106	0.120	0.106	Pass
Polyline 1	⌒ 4.000 A B		1.363	4.000	1.363	Pass

Final Judgement: PASS

Checked by: H.W | Reviewed by:

3D Dimensional Inspection Report

Our Superiority

1. High quality, comprehensive range and fast delivery.

◎ Extensive experience of tubing manufacturing guarantees the best quality.

◎ Offering tubing in a variety of materials and sizes for diverse industries and applications.

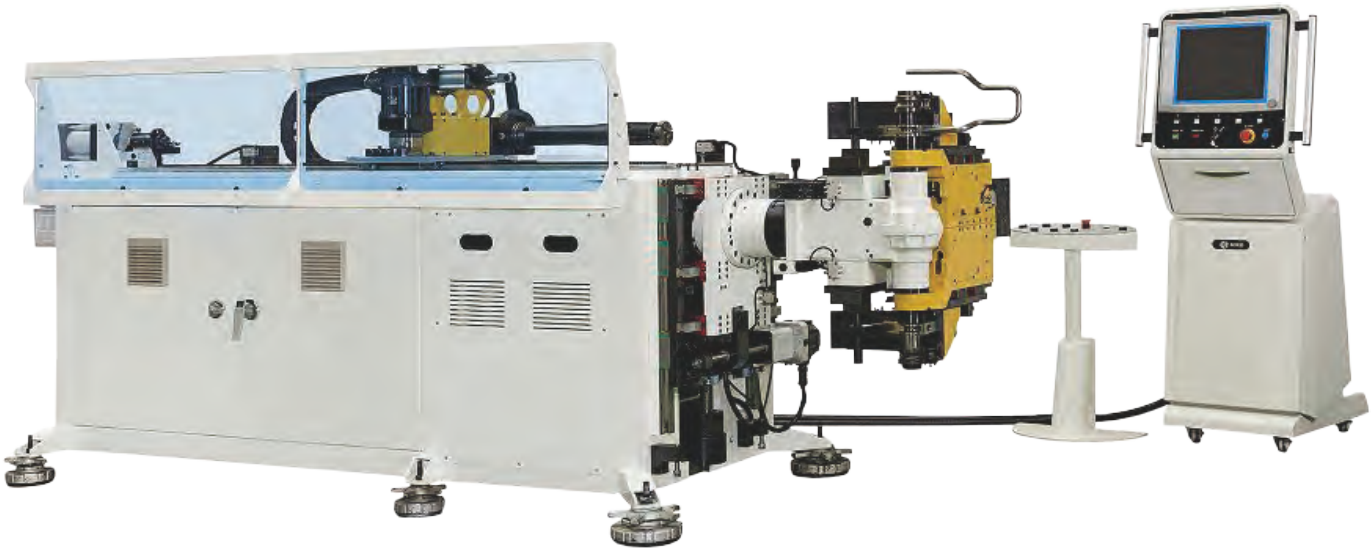
◎ Maintaining more than 15 million meters of tubing in stock for fast delivery.

2. Efficient communication and enhanced customer experience.

◎ Expert team with extensive product and business knowledge can accurately understand customer needs and concerns, providing efficient communication and effective solutions.

3. Automated bending machines ensure efficient production and excellent consistency.

- ◎ 3D simulation accurately models the tube bending process, enabling rapid verification of design feasibility and quick response to customer requirements.
- ◎ Automatic programmed control ensures high-precision mass production of complex bent tubes.
- ◎ One tubing supports six different bend radii and 50 bends in total.



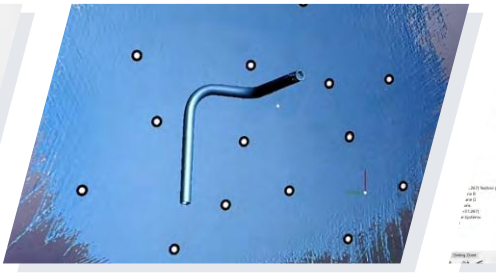
4. High accuracy measuring machines ensure product quality.

◎ Parameters such as profile, position, angle, roundness, cylindricity, verticality, length and bend radius can be measured.

◎ Measurement accuracy reaches 0.02 mm, with certified metrological-grade accuracy.

◎ Measurement speed reaches 2.1 million measurements per second, report can be generated automatically.

Step 1. Scanning of the Product



Step 2. 3D Model Generating

Step 3. Measuring Result Output

5. Economic and reliable packaging and shipping.

◎ Delivering over 1.8 million meters of tubing annually has provided us with extensive packaging experience.

◎ Standard short-length tubing helps reduce costs significantly by lowering both packaging and transportation expenses.

◎ Optimized packaging methods ensure product quality during transit while minimizing costs.

6. FITOK fittings and valves available for quick one-stop procurement.

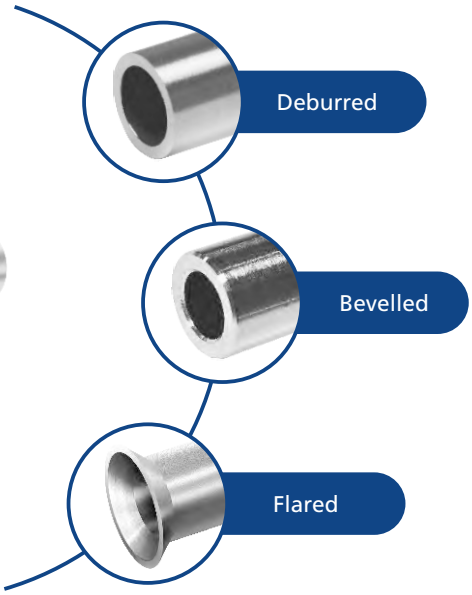
◎ 20+ years of experience in valve and fitting manufacturing, with products used globally and widely in diverse industries.

◎ Stringent validation testing ensures reliable connections among FITOK tubing, fittings and valves, eliminating mismatches or leaks when using components from different manufacturers.

Other Services

Custom length straight tubing with well treated ends (including deburring, beveling, and flaring), as well as cone and thread processing and ferrule presetting, are available.

◎ Custom-Length Straight Tubing with Well Treated Ends



◎ Cone and Thread Processing

◎ Ferrule Presetting

◎ Welded Assemblies

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www.fitok.com

FK-BR-CTB-EN-26V1