

Tee Filters (FT Series)

Catalog 4130-FT Revised, November 2000



FT Series Tee Filters

Introduction

Parker FT Series Tee Filters are designed for protection of instrumentation systems from undesirable materials. Component changes or repair and maintenance can admit dirt, chips, or other contaminants to the small bore tubing.

Features

- Filter element replacement achievable without removing filter from installation
- Compact, high strength forged body design with effective filtration areas of:

FT4 – 1.57 sq in (1013 sq mm) FT8 – 2.53 sq in (1632 sq mm)

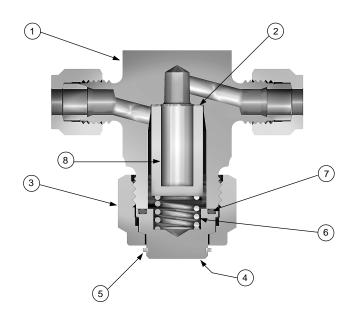
- Stainless steel and brass construction
- Standard sintered metal micron ratings: 1, 5, 10, 50, and 100
- Optional 250 and 450 micron wire cloth filter elements
- Optional bypass enables a continuous self cleaning flow around the element
- Port connections include male and female NPT, CPI™, A-LOK®, UltraSeal, and VacuSeal

Specifications

· Pressure Ratings:

With Elastomeric and Metallic Seals: Stainless Steel – 6000 psig CWP (414 bar) Brass – 2000 psig CWP (138 bar) With PTFE Seals:

Stainless Steel – 4000 psig CWP (276 bar) Brass – 2000 psig CWP (138 bar)



Model Shown: 4Z-FT4-10-BN-SS

Materials of Construction

Item #	Part	Stainless Steel Filter	Brass Filter			
1	Body	ASTM A 182 TYPE F316	ASTM B 283 Alloy C37700			
2	Washer		nless Steel			
3	Nut	ASTM A 479 TYPE 316	ASTM B 16 Alloy C36000			
4	Cap	ASTM A 479 TYPE 316	ASTM B 16 Alloy C36000			
5	Retainer Ring	PH 15-7 Mo S	Stainless Steel			
6	Spring	316 Stainless Steel				
7	Seal	Fluorocarbo	on Rubber*			
8	Element	316 Stain	less Steel			

^{*} Optional seal materials are available. See the How to Order Section. Lubrication: Silicone base

Definitions

Filter Element – The component within the filter which captures media contamination.

Filtration Area – The surface area of the filter element available to capture contamination.

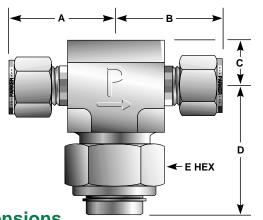
Micron – A unit of measure used to indicate the mean pore diameter of the filter element or the mean particle diameter of media contamination.

One micron = 0.00004 inch or 0.0010 mm

Installation

Best installation practice is to orient the cap downward. This helps to prevent contaminants from entering the system during element change.





Available End Connections

A-Two ferrule A-LOK® compression port



Z-Single ferrule CPI[™] compression port



M-ANSI/ASME B1.20.1 External pipe threads



F-ANSI/ASME B1.20.1 Internal pipe threads



Q-UltraSeal face seal port



V-VacuSeal face seal port



Model Shown: 4Z-FT4-10-BN-SS

Dimensions

Basic End Connections Part Number Port 1 Port 2 A† Bt C D E	Dimens	ions		<u> </u>				
Part Number Port 1 Port 2 At Bt C D E 2A-FT4 1/8" A-LOK® 1.14 1.14 1.14 1.14 22-FT4 1/8" A-LOK® 1.14 1.14 1.14 1.14 1.14 1.14 1.14 1.14 1.14 1.14 1.14 1.14 1.14 1.00 1.00 1.00 (25.4) (26.9) (26.9) (26.9) (26.9) (26.9) (26.9) (26.9) (27.7) (27.7) (27.7) (27.7)								
2A-FT4 1/8" A-LOK® 1.14 1.14 2Z-FT4 1/8" CPI™ (29.0) (29.0) 2F-FT4 1/8" Female NPT 1.00 1.00 2M-FT4 1/8" Male NPT 1.00 1.00 4A-FT4 1/4" A-LOK® 1.23 1.23 4Z-FT4 1/4" CPI™ (31.2) (31.2) 4F-FT4 1/4" Female NPT 1.06 1.06 0.51 1.53 0.88 4M-FT4 1/4" Male NPT 1.09 1.09 (30.9) (38.9) (22.4) 4V-FT4 1/4" UltraSeal 1.09 1.09 (27.7) (27.7) (27.7) 4V-FT4 1/4" VacuSeal 1.20 1.20 (30.5) (30.5) (30.5) M6A-FT4 6mm A-LOK® 1.23 1.24 1.42 1.42 </th <th>Basic</th> <th></th> <th>ections</th> <th></th> <th></th> <th></th> <th></th> <th></th>	Basic		ections					
2Z-FT4	Part Number				B†	C	D	E
2F-FT4 1/8" Female NPT 1.00 1.00 2M-FT4 1/8" Male NPT 1.00 1.00 4A-FT4 1/4" A-LOK® 1.23 1.23 4Z-FT4 1/4" CPI™ (31.2) (31.2) 4F-FT4 1/4" Female NPT 1.06 1.06 0.51 4F-FT4 1/4" Female NPT 1.09 1.09 (26.9) (13.0) (38.9) 4M-FT4 1/4" Male NPT 1.09 1.09 (27.7) (27.7) 4Q-FT4 1/4" UltraSeal 1.09 1.09 (27.7) (27.7) 4V-FT4 1/4" VacuSeal 1.20 1.20 (30.5) (30.5) (30.5) (30.5) M6A-FT4 6mm A-LOK® 1.23 1.23 M6Z-FT4 6mm CPI™ (31.2) (31.2) 6A-FT8 3/8" A-LOK® 1.42 1.42 6Z-FT8 3/8" Male NPT 1.19 1.19 6M-FT8 3/8" Male NPT 1.19 1.19 8Z-FT8 1/2" A-LOK® 1.53 1.53 8Z-FT8 1/2" CPI™ (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48	2A-FT4			1.14	1.14			
Canal	2Z-FT4	1/8"	CPI™	(29.0)	(29.0)			
2M-FT4 1/8" Male NPT 1.00 1.00 4A-FT4 1/4" A-LOK® 1.23 1.23 4Z-FT4 1/4" CPI™ (31.2) (31.2) 4F-FT4 1/4" Female NPT 1.06 1.06 0.51 1.53 0.88 4M-FT4 1/4" Male NPT 1.09 1.09 (26.9) (13.0) (38.9) (22.4) 4W-FT4 1/4" UltraSeal 1.09 1.09 (27.7) (27.7) (27.7) 4V-FT4 1/4" VacuSeal 1.20 1.20 (30.5) (30.5) (30.5) M6A-FT4 6mm A-LOK® 1.23 1.23 1.23 M6Z-FT4 6mm CPI™ (31.2) (31.2) (31.2) 6A-FT8 3/8" A-LOK® 1.42 1.42 1.42 6Z-FT8 3/8" CPI™ (36.1) (36.1) (36.1) (36.1) (30.2) (30.2) 8A-FT8 1/2" A-LOK® 1.53 1.53 1.53 82-FT8 1/2" CPI™ (38.9) (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48 1.48	2F-FT4	1/8" Fer	nale NPT	1.00	1.00			
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Cab Cab		·		(31.2)	(31.2)			
4M-FT4 1/4" Male NPT 1.09 1.09 4Q-FT4 1/4" UltraSeal 1.09 1.09 4V-FT4 1/4" VacuSeal 1.20 1.20 4V-FT4 1/4" VacuSeal 1.20 1.20 M6A-FT4 6mm A-LOK® 1.23 1.23 M6Z-FT4 6mm CPI™ (31.2) (31.2) 6A-FT8 3/8" A-LOK® 1.42 1.42 6Z-FT8 3/8" CPI™ (36.1) (36.1) 6M-FT8 3/8" Male NPT 1.19 1.19 6A-FT8 1/2" A-LOK® 1.53 1.53 8Z-FT8 1/2" CPI™ (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48	4F-FT4	1/4" Female NPT		1.06		0.51	1.53	0.88
C27.7 C27				(26.9)	(26.9)	(13.0)	(38.9)	(22.4)
4Q-FT4 1/4" UltraSeal 1.09 1.09 4V-FT4 1/4" VacuSeal 1.20 1.20 M6A-FT4 6mm A-LOK® 1.23 1.23 M6Z-FT4 6mm CPI™ (31.2) (31.2) 6A-FT8 3/8" A-LOK® 1.42 1.42 6Z-FT8 3/8" CPI™ (36.1) (36.1) 6M-FT8 3/8" Male NPT 1.19 1.19 6A-FT8 1/2" A-LOK® 1.53 1.53 8Z-FT8 1/2" CPI™ (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48	4M-FT4	4M-FT4 1/4" Male NPT		1.09	1.09			
C27.7				(27.7)	(27.7)			
4V-FT4 1/4" VacuSeal 1.20 1.20 (30.5) (30.5) (30.5) M6A-FT4 6mm A-LOK® 1.23 1.23 M6Z-FT4 6mm CPI™ (31.2) (31.2) 6A-FT8 3/8" A-LOK® 1.42 1.42 6Z-FT8 3/8" CPI™ (36.1) (36.1) 6M-FT8 3/8" Male NPT 1.19 1.19 (30.2) (30.2) (30.2) 8A-FT8 1/2" A-LOK® 1.53 1.53 8Z-FT8 1/2" CPI™ (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48	4Q-FT4	1/4" U	ItraSeal	1.09	1.09			
M6A-FT4				(27.7)	(27.7)			
M6A-FT4 6mm A-LOK® 1.23 1.23 M6Z-FT4 6mm CPI™ (31.2) (31.2) 6A-FT8 3/8" A-LOK® 1.42 1.42 6Z-FT8 3/8" CPI™ (36.1) (36.1) 6M-FT8 3/8" Male NPT 1.19 1.19 (30.2) (30.2) (30.2) 8A-FT8 1/2" A-LOK® 1.53 1.53 8Z-FT8 1/2" CPI™ (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48	4V-FT4	1/4" V	acuSeal	1.20	1.20			
M6Z-FT4 6mm CPI™ (31.2) (31.2) 6A-FT8 3/8" A-LOK® 1.42 1.42 6Z-FT8 3/8" CPI™ (36.1) (36.1) 6M-FT8 3/8" Male NPT 1.19 1.19 (30.2) (30.2) (30.2) 8A-FT8 1/2" A-LOK® 1.53 1.53 8Z-FT8 1/2" CPI™ (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48		C A OI/®		(30.5)	(30.5)	1		
6A-FT8 3/8" A-LOK® 1.42 1.42 6Z-FT8 3/8" CPI™ (36.1) (36.1) 6M-FT8 3/8" Male NPT 1.19 1.19 (30.2) (30.2) (30.2) 8A-FT8 1/2" A-LOK® 1.53 1.53 8Z-FT8 1/2" CPI™ (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48	M6A-FT4			1.23	1.23			
6Z-FT8 3/8" CPI™ (36.1) (36.1) 6M-FT8 3/8" Male NPT 1.19 1.19 (30.2) (30.2) (30.2) 8A-FT8 1/2" A-LOK® 1.53 1.53 8Z-FT8 1/2" CPI™ (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48	M6Z-FT4			(31.2)	(31.2)			
6M-FT8 3/8" Male NPT 1.19 (30.2) (30.2) 8A-FT8 1/2" A-LOK® 1.53 1.53 (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48	6A-FT8			1.42	1.42			
(30.2) (30.2) 8A-FT8	6Z-FT8	3/8"	CPI™	(36.1)	(36.1)			
8A-FT8 1/2" A-LOK® 1.53 1.53 8Z-FT8 1/2" CPI™ (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48	6M-FT8	3/8" M	ale NPT	1.19	1.19			
8Z-FT8 1/2" CPI™ (38.9) (38.9) 8F-FT8 1/2" Female NPT 1.48 1.48				(30.2)	(30.2)			
8F-FT8 1/2" Female NPT 1.48 1.48	8A-FT8	1/2" <i>F</i>	√-LOK®	1.53	1.53			
	8Z-FT8	1/2"	CPI™	(38.9)	(38.9)			
(37.6) (37.6)	8F-FT8	1/2" Fer	nale NPT	1.48	1.48			
				(37.6)	(37.6)			
8M-FT8 1/2" Male NPT 1.38 1.38 0.59 1.71 1.25	8M-FT8	1/2" M	ale NPT	1.38	1.38	0.59	1.71	1.25
(35.1) (35.1) (15.0) (43.4) (31.8)				(35.1)	(35.1)	(15.0)	(43.4)	(31.8)
8V-FT8 1/2" VacuSeal 1.33 1.33	8V-FT8	1/2" V	acuSeal	1.33	1.33			
(33.8) (33.8)				(33.8)	(33.8)			
M8A-FT8 8mm A-LOK® 1.44 1.44	M8A-FT8	8mm A-LOK®						
M8Z-FT8 8mm CPl™ (36.6) (36.6)	M8Z-FT8			(36.6)	(36.6)			
M10A-FT8 10mm A-LOK® 1.44 1.44	M10A-FT8					1		
M10Z-FT8 10mm CPI™ (36.6) (36.6)	M10Z-FT8	10mn	n CPI™	(36.6)	(36.6)			
M12A-FT8 12mm A-LOK® 1.54 1.54					 	1		
M12Z-FT8 12mm CPI™ (39.1) (39.1)	M12Z-FT8	12mn	n CPI™					

 \uparrow For $\mbox{CPI}^{\mbox{\tiny M}}$ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Maximum Pressure Differential Across Clean Filters at 70 $^{\circ}$ F (21 $^{\circ}$ C)

	1 micron	5 micron	10 micron	50 micron	100 micron	250 micron	450 micron
psig	2250	1950	1750	1150	1000	1000	1000
bar	155	134	120	79	69	69	69

How to Order

The correct part number is easily derived by following the circled number sequence. The six product characteristics required are coded as shown below. *Note: If both the inlet and outlet ports are the same, eliminate the outlet port designator.

Example:

<u>4M</u>	<u>*</u> -	<u>FT4</u>	- <u>5</u>	- <u>BN</u> -	- <u>В</u>
1	2	3	4	5	6
Inlet	Outlet	Valve	Micron	Seal	Body
Port	Port	Series	Rating	Material	Material

Describes an FT Series Filter with 1/4" male NPT inlet and outlet ports, a 5 micron element, Buna-N seal and brass body construction.

1 2 Inlet Outlet Port Port		3 Valve Series	4 Nominal Micron Rating	5 Seal Material	6 Body Material
2A, 2F, 2M, 2Z, 4A, 4F, 4M, 4Q, 4V, 4Z, M6A, M6Z		FT4	1 - 1 Micron 5 - 5 Micron	Blank - Fluorocarbon Rubber BN - Buna-N Rubber EPR - Ethylene	SS - Stainless
6A, 6M,		FTO	10 - 10 Micron 50 - 50 Micron	Propylene Rubber NE - Neoprene Rubber	Steel
8A, 8M, 8V, 8Z, M8A, M8Z, M10A, M10Z, M12A, M12Z		FT8	100 - 100 Micron 250 - 250 Micron 450 - 450 Micron	KZ - Highly Fluorinated Fluorocarbon Rubber HT - Silver Plated Nickel	B - Brass
				Alloy C-Ring T - PTFE	

Options

Oxygen Cleaning – Add the suffix–C3 to the end of the part number to receive filters cleaned and assembled for oxygen service in accordance with Parker specification ES8003. Example: 4A-FT4-10-V-SS-C3

Special Cleaning – All face seal ended filters are cleaned in accordance with Parker Specification ES8001. This is an option for all filters by adding the suffix–C1 to the end of the part number. Example: M6A-FT8-50-NE-SS-C1.

Bypass – Add the suffix–PB to the end of the part number to receive a 1/8" –27 FNPT tapped Cap for sampling.

Example: 2M-FT4-5-V-SS-PB

Integral Compression Ported Bypass Option – Add the suffix–**PBA** (A-LOK®) or–**PBZ** (CPI™) to the end of the part number to receive a 4Z/4A (FT4) or 8A/8Z (FT8) compression ported Cap.

Example: 2M-FT4-5-V-SS-PBZ

Kit Information

To order repair kits for the FT Series Filters, simply fill in the designators from the chart below.

Siz	ze	Micron Rating	Seal Material					
		1	V - Fluorocarbon Rybber					
		5	BN - Buna-N Rubber					
FT	4	10	EPR - Ethylene Propylene Rubber					
		50	NE - Neoprene Rubber					
FT	8	100	KZ - Highly Fluorinated Fluorocarbon					
		250	Rubber					
		450	HT - Silver Plated Nickel Alloy C-Ring					

Examples: KIT-FT4-10-V KIT-FT8-100-BN

Filter Kits Contain: Seals, Filter Element, Spring and Maintenance Instructions.

Caution: When interchanging sintered metal elements with wire cloth filter elements, the flow direction is reversed.

∕!\ WARNING

FAILURE, IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met.

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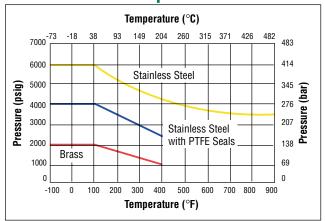
Offer of Sale

The items described in this document are hereby offered for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. This offer and its acceptance are governed by the provisions stated in the "Offer of Sale" located in Catalog 4110-U Needle Valves (U Series).

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Pressure vs. Temperature



Note: To determine MPa, multiply bar by 0.1

Note: This Pressure versus Temperature chart reflects the maximum temperature range of indicated body materials.

The temperature rating of the seal becomes the limiting factor on temperature range.

Temperature Ratings:

Buna-N Rubber

-40 °F to 275 °F (-40 °C to 135 °C)

Highly Fluorinated Fluorocarbon Rubber

-20 °F to 500 °F (-29 °C to 260 °C)

Ethylene Propylene Rubber

-70 °F to 300 °F (-56 °C to 149 °C)

Fluorocarbon Rubber

-40 °F to 400 °F (-40 °C to 204 °C)

Neoprene Rubber

-65 °F to 300 °F (-54 °C to 149 °C)

Silver Plated Nickel Alloy Gasket (C-ring)

-100 °F to 900 °F (-73 °C to 482 °C) PTFE

-70 °F to 400 °F (-56 °C to 204 °C)

Flow Calculations with 100 psig (7 bar) Inlet Pressure

Pressure			F	T4		FT8			
	Drop ΔP psig bar		Water m³/hr at 60 °F (16 °C)	Air SCFM at 60 °F (16 °C)	Air m³/hr at 60 °F (16 °C)	Water GPM at 60 °F (16 °C)	Water m³/hr at 60 °F (16 °C)	Air SCFM at 60 °F (16 °C)	Air m³/hr at 60 °F (16 °C)
hera		(16 °C)	` '	icron	(10 0)	(10 0)	1 Mic	, ,	(10 0)
5	0.35	0.16	0.04	1.69	2.68	0.28	0.06	2.89	4.58
10	0.69	0.23	0.05	2.35	3.72	0.39	0.09	4.02	6.36
50	3.45	0.51	0.12	4.63	7.18	0.87	0.20	7.91	12.26
- 00	0.10	0.01	****	icron	7.10	0.07	5 Mid		12.20
5	0.35	0.35	0.08	3.68	5.84	0.77	0.17	8.05	12.76
10	0.69	0.50	0.11	5.13	8.12	1.08	0.25	11.21	17.74
50	3.45	1.11	0.25	10.10	15.65	2.43	0.55	22.07	34.19
			10 M				10 Mic		
5	0.35	0.44	0.10	4.57	7.26	0.94	0.21	9.90	15.70
10	0.69	0.62	0.14	6.37	10.09	1.33	0.30	13.79	21.83
50	3.45	1.38	0.31	12.55	19.44	2.98	0.68	27.15	42.07
	•		50 M	icron		50 Micron			
5	0.35	0.52	0.12	5.42	8.59	0.99	0.23	10.42	16.52
10	0.69	0.73	0.17	7.55	11.95	1.40	0.32	14.51	22.97
50	3.45	1.63	0.37	14.86	23.03	3.14	0.71	28.57	44.26
			100 N	/licron		100 Micron			
5	0.35	0.65	0.15	6.78	10.75	1.64	0.37	17.22	27.31
10	0.69	0.91	0.21	9.45	14.95	2.32	0.53	23.99	37.97
50	3.45	2.04	0.46	18.60	28.81	5.19	1.18	47.23	73.17
			250 M	licron		250 Micron			
5	0.35	1.14	0.26	11.94	18.92	1.74	0.40	18.22	28.88
10	0.69	1.62	0.37	16.56	26.17	2.47	0.56	25.28	39.95
50	3.45	3.61	0.82	31.30	48.07	5.52	1.25	47.78	73.37
			450 M			450 Micron			
5	0.35	1.23	0.28	12.84	20.35	1.88	0.43	19.64	31.13
10	0.69	1.74	0.39	17.82	28.17	2.66	0.60	27.27	43.10
50	3.45	3.88	0.88	33.92	52.16	5.94	1.35	51.89	79.81

Flow / Filtration Data

			$c_{_{ m r}}$ †							
Filter	er Effective		1	5	10	50	100	250	450	
Series	Filtratio	n Area	micron	micron	micron	micron	micron	micron	micron	
			Micron Range	Micron Range	Micron Range	Micron Range	Micron Range	Micron Range	Micron Range	
	sq in	sq mm	.5 to 3	5 to 10	10 to 20	40 to 50	100 to 150	225 to 275	400 to 500	
FT4	1.57	1012	0.072	0.157	0.195	0.231	0.289	0.511	0.549	
FT8	2.53	1632	0.123	0.343	0.422	0.444	0.734	0.780	0.840	

[†] Tested in accordance with ISA S75.02. Gas flow will be choked when P_1 - P_2 / P_4 = X_T .

 x_r =1.0 for micron sizes 1 through 100; 0.78 for the 250 micron size, and 0.81 for the 450 micron size.



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