Parker
Instrumentation

Tee Filters (FT Series)

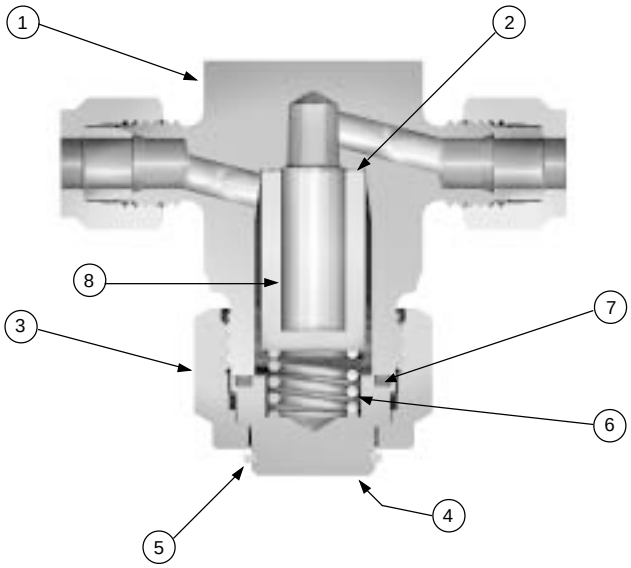
Catalog 4130-FT
Revised, October 2001

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



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

Specifications

- **Pressure Ratings:**
  With Elastomeric and Metallic Seals:
  Stainless Steel – 6000 psig (414 bar) CWP
  Brass – 2000 psig (138 bar) CWP
  With PTFE Seals:
  Stainless Steel – 4000 psig (276 bar) CWP
  Brass – 2000 psig (138 bar) CWP

Materials of Construction

Item #	Part	Stainless Steel Filter	Brass Filter
1	Body	ASTM A 182 TYPE F316	ASTM B 283 Alloy C37700
2	Washer	316 Stainless 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 Stainless Steel	
6	Spring	316 Stainless Steel	
7	Seal	Fluorocarbon Rubber*	
8	Element	316 Stainless Steel	

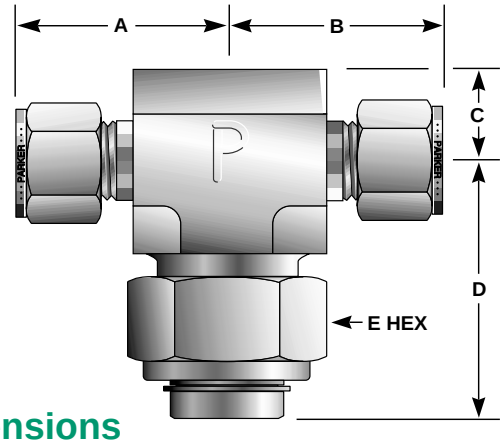
* Optional seal materials are available. See the How to Order Section.
Lubrication: Silicone base

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.



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

Dimensions

Basic Part Number	End Connections Port 1	End Connections Port 2	Dimensions Inches (mm) A†	B†	C	D	E
2A-FT4	1/8" A-LOK®		1.14 (29.0)	1.14 (29.0)			
2Z-FT4	1/8" CPI™						
2F-FT4	1/8" Female NPT		1.00 (25.4)	1.00 (25.4)			
2M-FT4	1/8" Male NPT		1.00 (25.4)	1.00 (25.4)			
4A-FT4	1/4" A-LOK®		1.23 (31.2)	1.23 (31.2)			
4Z-FT4	1/4" CPI™						
4F-FT4	1/4" Female NPT		1.06 (26.9)	1.06 (26.9)	0.51 (13.0)	1.53 (38.9)	0.88 (22.4)
4M-FT4	1/4" Male NPT		1.09 (27.7)	1.09 (27.7)			
4Q-FT4	1/4" UltraSeal		1.09 (27.7)	1.09 (27.7)			
4V-FT4	1/4" VacuSeal		1.20 (30.5)	1.20 (30.5)			
M6A-FT4	6mm A-LOK®		1.23 (31.2)	1.23 (31.2)			
M6Z-FT4	6mm CPI™						
6A-FT8	3/8" A-LOK®		1.42 (36.1)	1.42 (36.1)			
6Z-FT8	3/8" CPI™						
6M-FT8	3/8" Male NPT		1.19 (30.2)	1.19 (30.2)			
8A-FT8	1/2" A-LOK®		1.53 (38.9)	1.53 (38.9)			
8Z-FT8	1/2" CPI™						
8F-FT8	1/2" Female NPT		1.48 (37.6)	1.48 (37.6)			
8M-FT8	1/2" Male NPT		1.38 (35.1)	1.38 (35.1)	0.59 (15.0)	1.71 (43.4)	1.25 (31.8)
8V-FT8	1/2" VacuSeal		1.33 (33.8)	1.33 (33.8)			
M8A-FT8	8mm A-LOK®		1.44 (36.6)	1.44 (36.6)			
M8Z-FT8	8mm CPI™						
M10A-FT8	10mm A-LOK®		1.44 (36.6)	1.44 (36.6)			
M10Z-FT8	10mm CPI™						
M12A-FT8	12mm A-LOK®		1.54 (39.1)	1.54 (39.1)			
M12Z-FT8	12mm CPI™						

† For CPI™ and A-LOK®, dimensions are measured with nuts in the finger tight position.

Maximum Pressure Differential Across Clean Filters at 70 °F (21 °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

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

Parker Instrumentation

Parker Hannifin Corporation
Instrumentation Valve Division
Jacksonville, Alabama

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

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 6A/6Z (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.

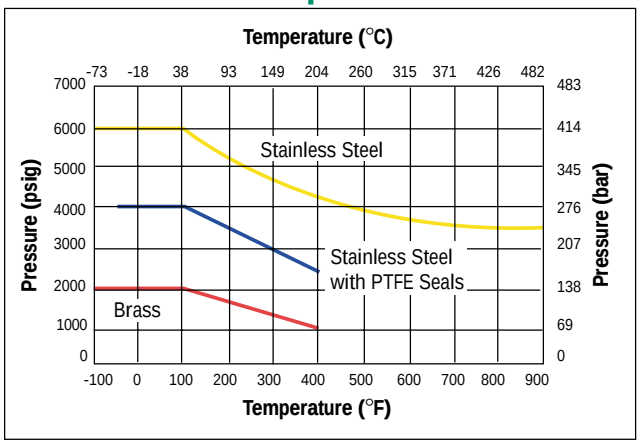
Size	Micron Rating	Seal Material
	1	**V -** Fluorocarbon Rybber
	5	**BN -** Buna-N Rubber
FT4	10	**EPR -** Ethylene Propylene Rubber
	50	**NE -** Neoprene Rubber
FT8	100	**KZ -** Highly Fluorinated Fluorocarbon
	250	Rubber
	450	**HT -** Silver Plated Nickel Alloy C-Ring

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.

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 Drop ΔP		FT4				FT8			
psig	bar	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)	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)
		1 Micron				1 Micron			
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
		5 Micron				5 Micron			
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 Micron				10 Micron			
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 Micron				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 Micron				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 Micron				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 Micron				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

Filter Series	Effective Filtration Area		C_v†						
			1 micron	5 micron	10 micron	50 micron	100 micron	250 micron	450 micron
	sq in	sq mm	Micron Range .5 to 3	Micron Range 5 to 10	Micron Range 10 to 20	Micron Range 40 to 50	Micron Range 100 to 150	Micron Range 225 to 275	Micron Range 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 $P_1 - P_2 / P_1 = x_T$.
x_T=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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