FILTERS

NUPRO
A SWAGELOK COMPANY

NUPRO Company
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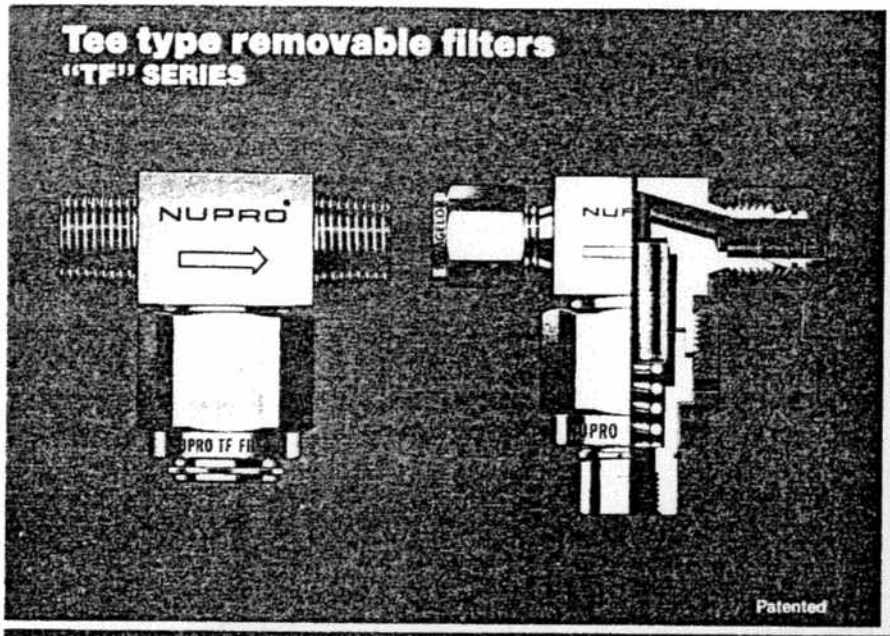

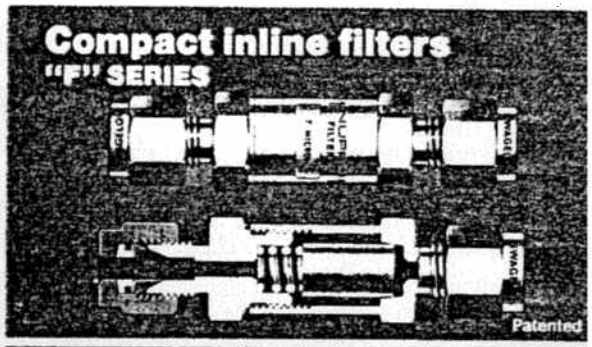

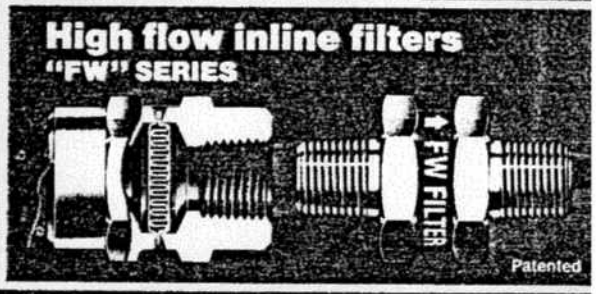

SCOPE NUPRO provides three basic filter designs to remove system contaminants in a variety of filtration applications.

"TF" Series — for easy inline removal of element in a tee design; also a by-pass version is available.

"F" Series — a compact, inline model for use where space is at a premium and flow requirements are moderate. Elements are replaceable.

"FW" Series — a high flow, inline filter with large element area in a unique design. It is all welded and elements may be cleaned by back-flushing.

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"TF" SERIES TEE TYPE REMOVABLE FILTERS

SPECIAL FEATURES

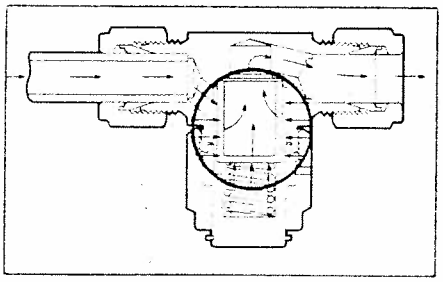
NUPRO "TF" Series Inline Filters remove contamination as small as one-half micron (nominal size) • Filter body need not be removed from line to change elements • All parts, except body, element and gasket remain together as one unit during maintenance to prevent loss or improper assembly of parts • Safety designed union bonnet construction • Tube socket or butt weld end connections also available in various sizes • Bypass feature available for sampling • Pressures to 6000 PSI (41300 kPa) • Temperatures to 900°F (482°C).

OPERATION

Fluid passes from the outside area of the filter element to the inside. This provides a large effective filtering area and eliminates the possibility of the element being unseated due to pressure buildup or pulsations. The element traps contamination, allowing the cleaned fluid to pass through the system. To maintain maximum flow, the element should be periodically cleaned with a suitable cleansing agent.

INSTALLATION

Preferred installation is with the bonnet oriented downward. This prevents contamination from dropping into the system during element change. Installation with the bonnet oriented otherwise is acceptable, if necessary.



MATERIALS

Body, Bonnet, Union Nut — 316 stainless steel or brass

Spring — 302 stainless steel

Retaining Ring — 15-7 Mo stainless steel

Gasket — Silver plated 316 stainless steel in stainless steel filters; aluminum in brass filters. Optional soft Kel-F gaskets available.

TECHNICAL DATA

	EFFECTIVE SINTERED ELEMENT AREA		EFFECTIVE STRAINER ELEMENT AREA		MAXIMUM PRESSURE RATING @ 70°F (21°C)		MAXIMUM TEMPERATURE RATING	
					BRASS	SS	BRASS	SS
					2000 PSI (13700 kPa) w/aluminum or Kel-F gasket	6000 PSI (41300 kPa) w/SS gasket 3000 PSI (20600 kPa) w/Kel-F gasket	300°F (149°C) 200°F (93°C) w/Kel-F gasket	900°F (482°C) 200°F (93°C) w/Kel-F gasket
6TF 8TF	2.0	1280	2.0	1280				

1 Maximum differential pressure across element on all filters 1000 PSI (6800 kPa) @ 70°F (21°C)

MAINTENANCE

To replace filter element:

1. Loosen union bonnet nut with open end wrench. Support body to minimize strain on pipe or tubing.

2. Unscrew union nut and remove assembly. (Note: union nut, bonnet, spring and retaining ring remain together as an assembly.)

3. Tap filter element lightly on side with a nonmetallic object to break loose from tapered seating area.

4. Insert new filter element or strainer element. Tap lightly with smooth faced tool to reseat element in tapered bore.

5. Inspect gasket and mating surfaces on bonnet and body. Clean as required. Replacement of the gasket is recommended.

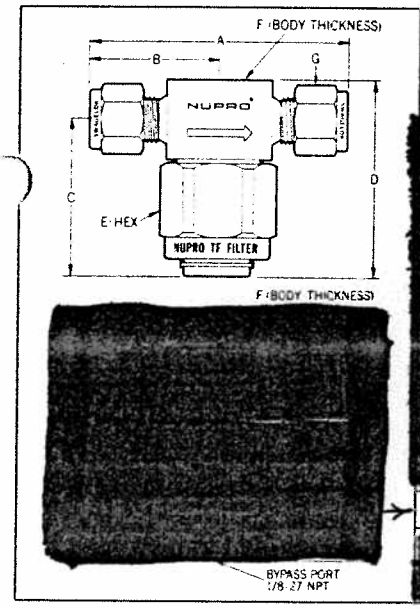
6. Replace bonnet assembly and tighten securely.

"TF" SERIES TEE TYPE REMOVABLE FILTERS (continued)

FLOW CAPACITIES

	PRESSURE DROP TO ATM (ΔP) PSI	"2TF" FILTERS		"2TF2" FILTERS		"2TF4•4TF•4TF2•4TF4•4TF-TW" FILTERS		ALL "6TF-8TF" FILTERS	
		AIR SCFM @ 70°F (21°C)	WATER GPM @ 70°F (21°C)	AIR SCFM @ 70°F (21°C)	WATER GPM @ 70°F (21°C)	AIR SCFM @ 70°F (21°C)	WATER GPM @ 70°F (21°C)	AIR SCFM @ 70°F (21°C)	WATER GPM @ 70°F (21°C)
SINTERED ELEMENTS		0.5 MICRON-MAX. FLOW $C_V = 0.029$		0.5 MICRON-MAX. FLOW $C_V = 0.029$		0.5 MICRON-MAX. FLOW $C_V = 0.029$		0.5 MICRON-MAX. FLOW $C_V = 0.045$	
	10	0.42	0.09	0.42	0.09	0.42	0.09	0.63	0.14
	50	1.11	0.21	1.11	0.21	1.11	0.21	1.73	0.32
	100	1.97	0.29	1.97	0.29	1.97	0.29	3.06	0.45
		2 MICRON-MAX. FLOW $C_V = 0.035$		2 MICRON-MAX. FLOW $C_V = 0.040$		2 MICRON-MAX. FLOW $C_V = 0.040$		2 MICRON-MAX. FLOW $C_V = 0.055$	
	10	0.51	0.11	0.55	0.13	0.55	0.13	0.78	0.18
	50	1.33	0.25	1.53	0.28	1.53	0.28	2.10	0.39
	100	2.31	0.35	2.71	0.40	2.71	0.40	3.72	0.53
		7 MICRON-MAX. FLOW $C_V = 0.046$		7 MICRON-MAX. FLOW $C_V = 0.054$		7 MICRON-MAX. FLOW $C_V = 0.056$		7 MICRON-MAX. FLOW $C_V = 0.11$	
	10	0.64	0.15	0.75	0.17	0.77	0.18	1.52	0.35
	50	1.76	0.33	2.07	0.38	2.14	0.40	4.21	0.78
	100	3.12	0.46	3.66	0.54	3.80	0.56	7.46	1.10
		15 MICRON-MAX. FLOW $C_V = 0.053$		15 MICRON-MAX. FLOW $C_V = 0.068$		15 MICRON-MAX. FLOW $C_V = 0.074$		15 MICRON-MAX. FLOW $C_V = 0.13$	
	10	0.73	0.17	0.94	0.22	1.02	0.23	1.80	0.41
	50	2.03	0.37	2.60	0.48	2.83	0.52	4.97	0.92
	100	3.59	0.53	4.61	0.68	5.02	0.74	8.82	1.30
		60 MICRON-MAX. FLOW $C_V = 0.089$		60 MICRON-MAX. FLOW $C_V = 0.16$		60 MICRON-MAX. FLOW $C_V = 0.22$		60 MICRON-MAX. FLOW $C_V = 0.37$	
	10	1.23	0.28	2.21	0.51	3.04	0.70	5.12	1.17
	50	3.40	0.63	6.12	1.13	8.42	1.56	14.15	2.62
	100	6.04	0.89	10.85	1.60	14.92	2.20	25.09	3.70
		90 MICRON-MAX. FLOW $C_V = 0.094$		90 MICRON-MAX. FLOW $C_V = 0.18$		90 MICRON-MAX. FLOW $C_V = 0.28$		90 MICRON-MAX. FLOW $C_V = 0.50$	
	10	1.30	0.30	2.49	0.57	3.87	0.89	6.92	1.58
	50	3.60	0.66	6.89	1.27	10.71	1.98	19.13	3.54
	100	6.37	0.94	12.21	1.80	18.99	2.80	33.91	5.00
STRAINER ELEMENTS		140, 230 OR 440 MICRON MAX. FLOW $C_V = 0.10$		140, 230 OR 440 MICRON MAX. FLOW $C_V = 0.21$		140, 230 OR 440 MICRON MAX. FLOW $C_V = 0.37$		140, 230 OR 440 MICRON MAX. FLOW $C_V = 0.73$	
	10	1.38	0.32	2.91	0.66	5.12	1.17	10.10	2.31
	50	3.83	0.71	8.03	1.48	14.15	2.62	27.92	5.16
	100	6.78	1.00	14.24	2.10	25.09	3.70	49.50	7.30

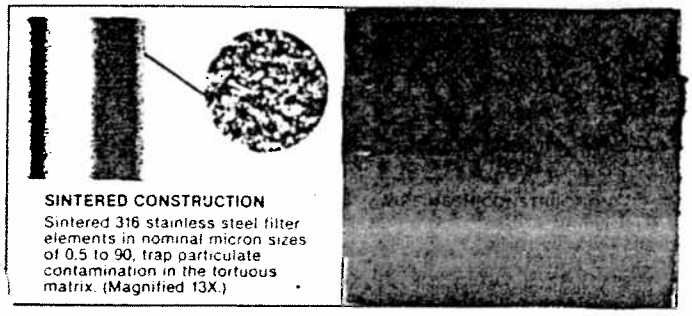
TABLE OF DIMENSIONS



CATALOG[1] NUMBER	ORIFICE In.	ORIFICE mm	CONNECTION SIZE INLET & OUTLET	DIMENSIONS[2] A	B	C	D	E HEX	F	G HEX
-8TF-	0.250	6.4	½ SWAGELOK	3 1/16	1 17/32	1 23/32	2 3/16	1 1/8	1 1/8	7/8

[1] For a complete ordering number, add B for brass or SS for 316 stainless steel as a prefix to the catalog number. For filters with sintered elements, add 0.5, 2, 7, 15, 60 or 90 as a suffix to the catalog number. Example: B-4TF-7. For filters with strainer elements, add 40, 140, 230 or 440 as a suffix to the catalog number. Example: SS-8TF-TW-230 [2] Dimensions shown with SWAGELOK nuts finger-tight, where applicable. All dimensions are in inches—for reference only, subject to change [3] Other models with the bypass feature are available on special order

REPLACEMENT — SINTERED & STRAINER ELEMENTS FOR "TF" & "F" SERIES FILTERS



SINTERED CONSTRUCTION
Sintered 316 stainless steel filter elements in nominal micron sizes of 0.5 to 90, trap particulate contamination in the tortuous matrix. (Magnified 13X.)

ELEMENT MATERIALS

Sintered Elements — 316 stainless steel (0.5, 2, 7, 15, 60 and 90 micron available) — Alloy 400 and Alloy C-276 available on special order.

Strainer Elements — 316 stainless steel wire mesh, silver brazed (40, 140, 230 and 440 micron available).

FILTRATION DEFINITIONS

Micron — One micron equals 1/25000 inch (.00004 inches/.001 mm). Microns are used to indicate mean pore diameter of a sintered element or mean particle diameter of fluid contamination. Filter Element — That portion of a filter which actually stops fluid contamination. Nominal Rating — Initial removal of 95% to 98% of particles larger than a given size. Effective Filter Area — The actual area open to flow in a filter element. Filter Cake — The accumulation of solids deposited on a filter element from usage.

FILTER SERIES	ELEMENT PART NUMBER	STRAINER ELEMENT NOMINAL MICRON SIZE	SINTERED ELEMENT NOMINAL MICRON SIZE	SINTERED ELEMENT MICRON RANGE
			0.5	0.5-2
-8TF	SS-8F-P4-	40, 140, 230, 440		

* To order spare sintered elements, add 0.5, 2, 7, 15, 60 or 90 as a suffix to the element part number. Add 40, 140, 230 or 440 to specify a strainer element. Example: SS-4F-P4-7, SS-8F-P4-140