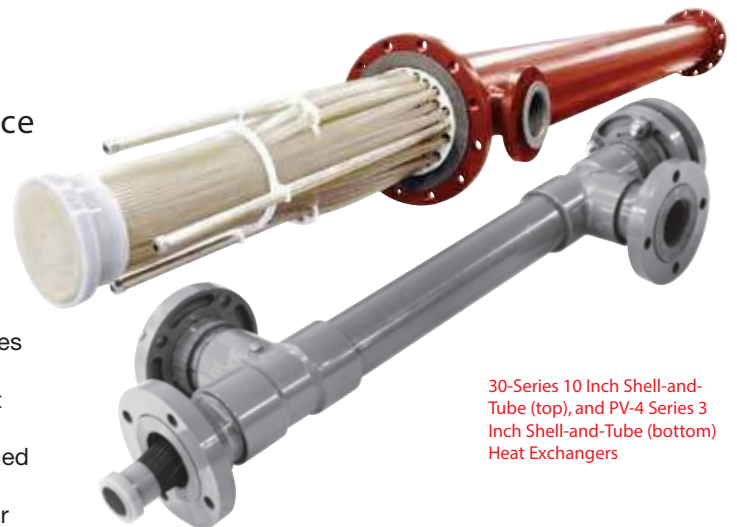


## SHELL AND TUBE HEAT EXCHANGERS

- High Thermal Efficiency
- Unmatched Corrosion Resistance
- Unique Seal System
- FEP, PFA or Q Series Tubing

Niche Shell and Tube Heat Exchangers are available in a wide variety of capacities and sizes to meet virtually any type of process heating or cooling requirement. Niche Fluoropolymer Heat Exchangers are single pass, typically counter current flow designs incorporating the unmatched corrosion resistant qualities of fluoropolymer resins. Units are available with FEP, PFA and our proprietary highly conductive Q-series tubing. Most units can be supplied with shells made of Carbon Steel, Stainless Steel, PTFE lined, CPVC or a variety of materials to meet specific application requirements. Metal heat exchanger shells are ASME coded and equipped with TEMA/ANSI end nozzle connections.



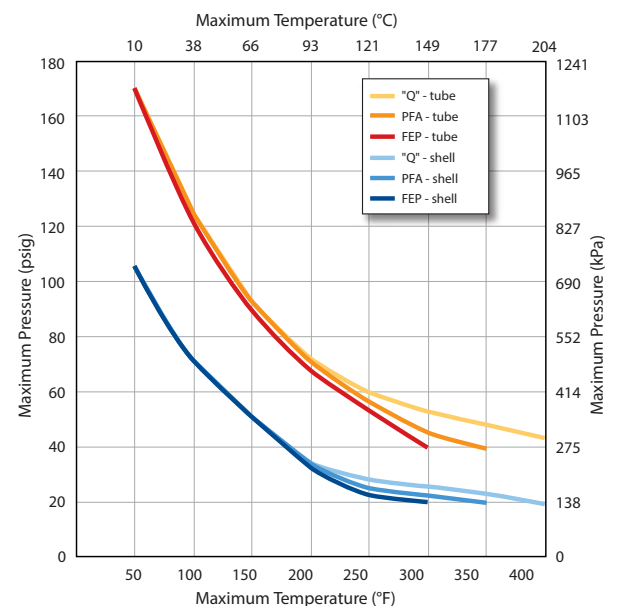
30-Series 10 Inch Shell-and-Tube (top), and PV-4 Series 3 Inch Shell-and-Tube (bottom) Heat Exchangers

### Ordering Information

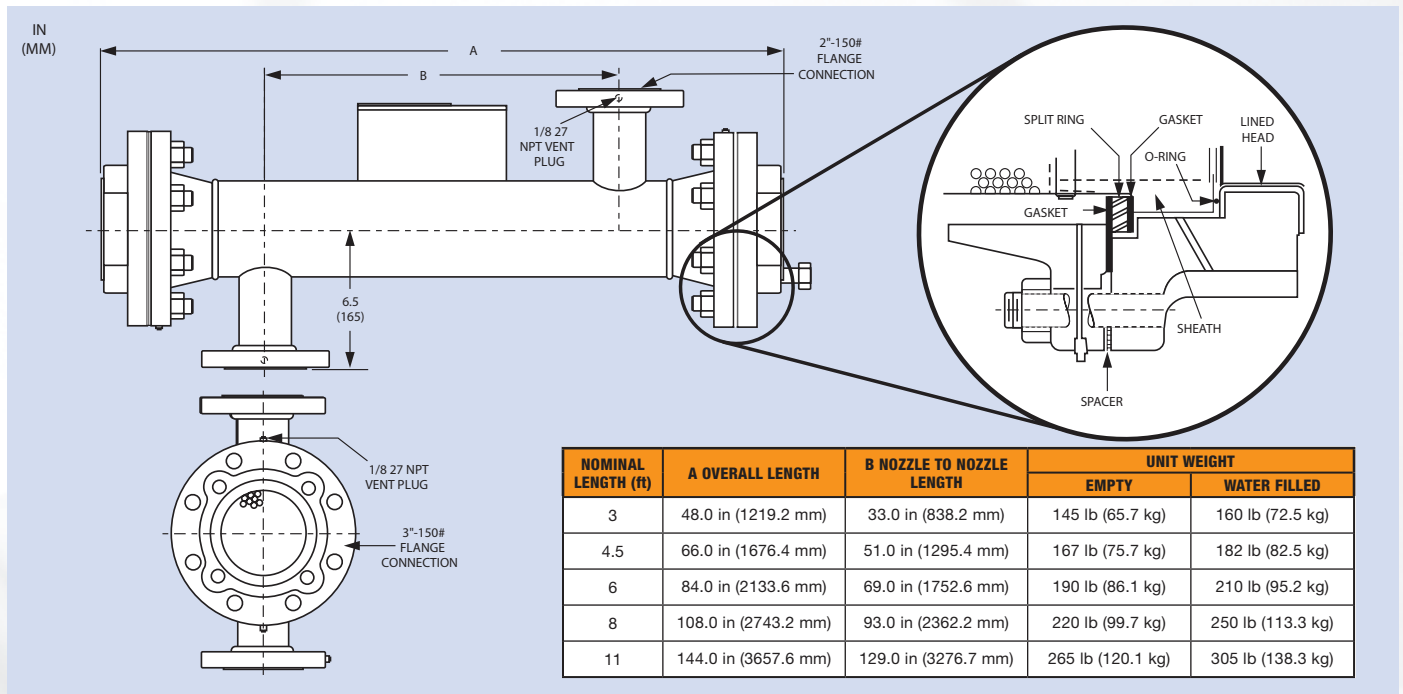
EXAMPLE: Q 105 CT M 30-8-VE		
Q	TUBING	P = PFA
		Q = PFA/Graphite
		(blank) = FEP
105	MODEL NUMBER	
CT	SHELL	CT = Carbon steel shell
M	END CONNECTIONS	M = Metric
		(blank) = ANSI
30	GENERATION	
8	NOMINAL LENGTH (ft.)	
V	O-RING SEAL MATERIAL	V = VITON®
		E = Ethylene propylene
		T = Fluoropolymer encapsulated VITON®
		K = KALREZ®
E	ENVELOPE GASKET MATERIAL	V = VITON®
		E = Ethylene propylene

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### Tube Side and Shell Side Pressure Limitations



## Dimensions - 30 Series - 4" Shell



## Heat Transfer Area - 30 Series - 4" Shell

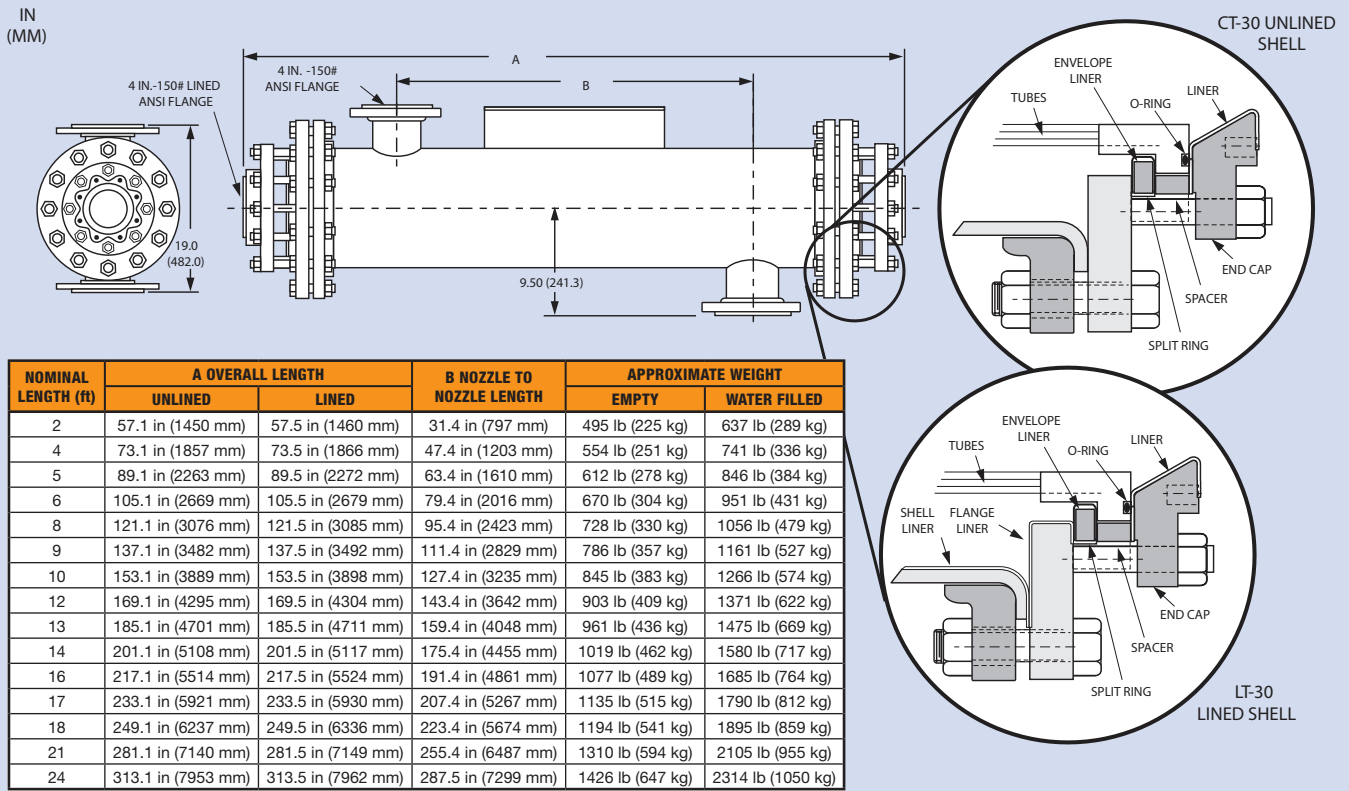
NOMINAL LENGTH (ft.)	MODEL 105	MODEL 220	MODEL 440
3	19.4 ft <sup>2</sup> (1.8 m <sup>2</sup> )	30.2 ft <sup>2</sup> (2.8 m <sup>2</sup> )	43.0 ft <sup>2</sup> (4.0 m <sup>2</sup> )
4.5	29.0 ft <sup>2</sup> (2.7 m <sup>2</sup> )	45.3 ft <sup>2</sup> (4.2 m <sup>2</sup> )	64.8 ft <sup>2</sup> (6.0 m <sup>2</sup> )
6	38.7 ft <sup>2</sup> (3.6 m <sup>2</sup> )	60.5 ft <sup>2</sup> (5.6 m <sup>2</sup> )	86.4 ft <sup>2</sup> (8.0 m <sup>2</sup> )
8	51.6 ft <sup>2</sup> (4.8 m <sup>2</sup> )	80.6 ft <sup>2</sup> (7.5 m <sup>2</sup> )	115.2 ft <sup>2</sup> (10.7 m <sup>2</sup> )
11	71.0 ft <sup>2</sup> (6.6 m <sup>2</sup> )	110.8 ft <sup>2</sup> (10.3 m <sup>2</sup> )	158.3 ft <sup>2</sup> (14.7 m <sup>2</sup> )

## Heat Transfer Area - 30 Series - 10" and 14' Shell

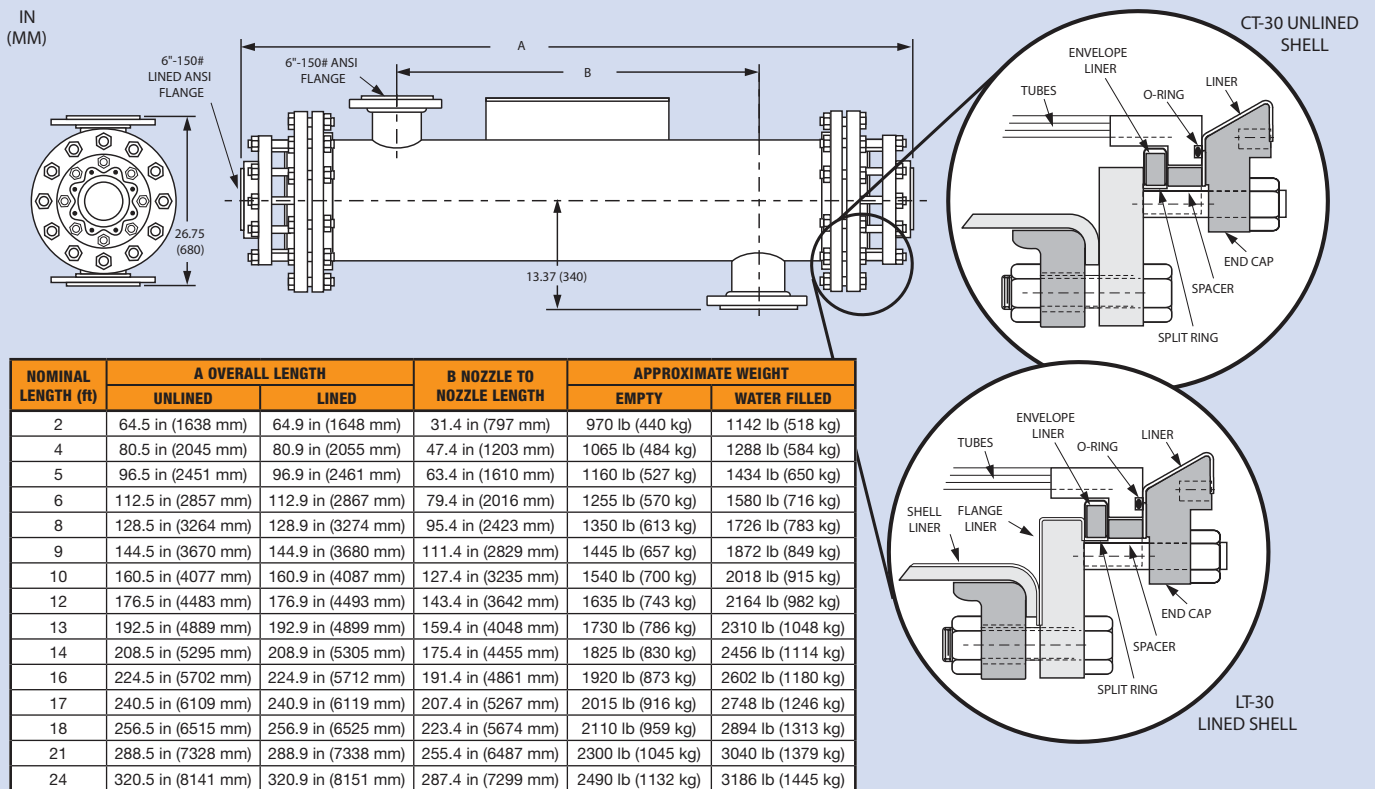
NOMINAL LENGTH (ft.)	10" SHELL			14" SHELL
	MODEL 218	MODEL 525	MODEL 1000	MODEL 950
2	36 ft <sup>2</sup> (3.3 m <sup>2</sup> )	57 ft <sup>2</sup> (5.2 m <sup>2</sup> )	80 ft <sup>2</sup> (7.4 m <sup>2</sup> )	102 ft <sup>2</sup> (9.5 m <sup>2</sup> )
4	64 ft <sup>2</sup> (5.9 m <sup>2</sup> )	102 ft <sup>2</sup> (9.4 m <sup>2</sup> )	144 ft <sup>2</sup> (13.4 m <sup>2</sup> )	183 ft <sup>2</sup> (17.0 m <sup>2</sup> )
5	93 ft <sup>2</sup> (8.6 m <sup>2</sup> )	147 ft <sup>2</sup> (13.6 m <sup>2</sup> )	208 ft <sup>2</sup> (19.3 m <sup>2</sup> )	264 ft <sup>2</sup> (24.5 m <sup>2</sup> )
6	121 ft <sup>2</sup> (11.2 m <sup>2</sup> )	192 ft <sup>2</sup> (17.8 m <sup>2</sup> )	272 ft <sup>2</sup> (25.3 m <sup>2</sup> )	345 ft <sup>2</sup> (32.0 m <sup>2</sup> )
8	150 ft <sup>2</sup> (13.9 m <sup>2</sup> )	237 ft <sup>2</sup> (22.0 m <sup>2</sup> )	336 ft <sup>2</sup> (31.2 m <sup>2</sup> )	425 ft <sup>2</sup> (39.5 m <sup>2</sup> )
9	178 ft <sup>2</sup> (16.5 m <sup>2</sup> )	283 ft <sup>2</sup> (26.2 m <sup>2</sup> )	400 ft <sup>2</sup> (37.2 m <sup>2</sup> )	508 ft <sup>2</sup> (47.2 m <sup>2</sup> )
10	207 ft <sup>2</sup> (19.2 m <sup>2</sup> )	328 ft <sup>2</sup> (30.4 m <sup>2</sup> )	464 ft <sup>2</sup> (43.1 m <sup>2</sup> )	589 ft <sup>2</sup> (54.7 m <sup>2</sup> )
12	235 ft <sup>2</sup> (21.8 m <sup>2</sup> )	373 ft <sup>2</sup> (34.6 m <sup>2</sup> )	528 ft <sup>2</sup> (49.1 m <sup>2</sup> )	670 ft <sup>2</sup> (62.2 m <sup>2</sup> )
13	264 ft <sup>2</sup> (24.5 m <sup>2</sup> )	418 ft <sup>2</sup> (38.8 m <sup>2</sup> )	592 ft <sup>2</sup> (55.0 m <sup>2</sup> )	750 ft <sup>2</sup> (69.7 m <sup>2</sup> )
14	293 ft <sup>2</sup> (27.1 m <sup>2</sup> )	463 ft <sup>2</sup> (43.0 m <sup>2</sup> )	656 ft <sup>2</sup> (60.9 m <sup>2</sup> )	831 ft <sup>2</sup> (77.2 m <sup>2</sup> )
16	321 ft <sup>2</sup> (29.8 m <sup>2</sup> )	509 ft <sup>2</sup> (47.2 m <sup>2</sup> )	720 ft <sup>2</sup> (66.9 m <sup>2</sup> )	914 ft <sup>2</sup> (84.9 m <sup>2</sup> )
17	350 ft <sup>2</sup> (32.4 m <sup>2</sup> )	554 ft <sup>2</sup> (51.4 m <sup>2</sup> )	784 ft <sup>2</sup> (72.9 m <sup>2</sup> )	995 ft <sup>2</sup> (92.4 m <sup>2</sup> )
18	378 ft <sup>2</sup> (35.1 m <sup>2</sup> )	599 ft <sup>2</sup> (55.6 m <sup>2</sup> )	848 ft <sup>2</sup> (78.8 m <sup>2</sup> )	1075 ft <sup>2</sup> (99.9 m <sup>2</sup> )
21	435 ft <sup>2</sup> (40.4 m <sup>2</sup> )	689 ft <sup>2</sup> (64.0 m <sup>2</sup> )	976 ft <sup>2</sup> (90.7 m <sup>2</sup> )	1237 ft <sup>2</sup> (114.9 m <sup>2</sup> )
24	492 ft <sup>2</sup> (45.7 m <sup>2</sup> )	780 ft <sup>2</sup> (72.4 m <sup>2</sup> )	1104 ft <sup>2</sup> (102.6 m <sup>2</sup> )	1400 ft <sup>2</sup> (130.1 m <sup>2</sup> )

### Dimensions - 30 Series - 4" Shell

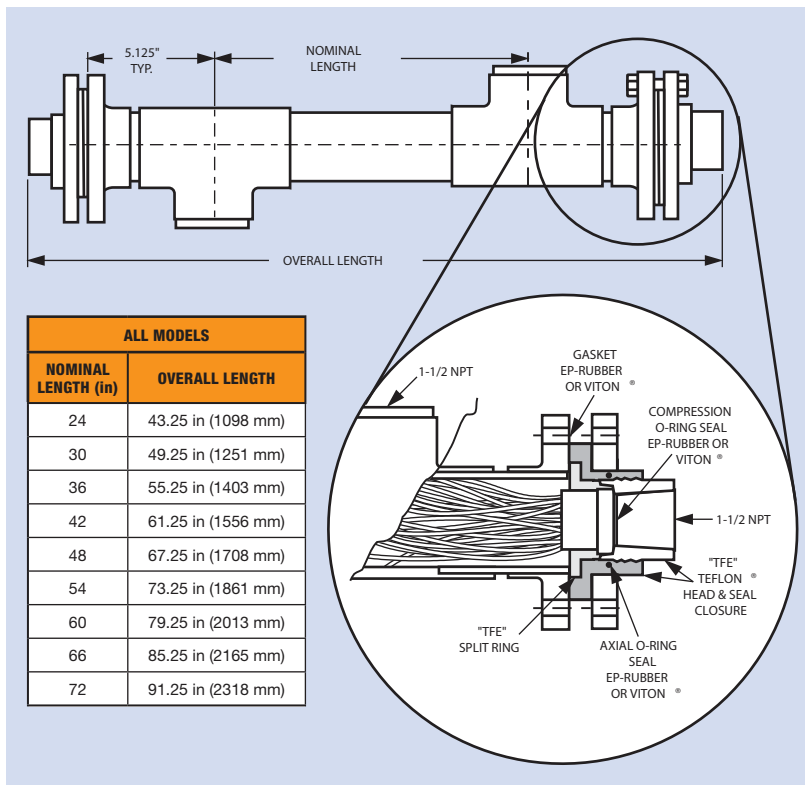
### Dimensions - 30 Series - 10" Shell



### Dimensions - 30 Series - 14" Shell



## Dimensions - PV-4 Series



## Heat Transfer Area - PV-4 Series

NOMINAL LENGTH (ft.)	MODEL 40	MODEL 80	MODEL 180
2.0	5 ft <sup>2</sup> (0.47 m <sup>2</sup> )	7 ft <sup>2</sup> (0.65 m <sup>2</sup> )	12 ft <sup>2</sup> (1.09 m <sup>2</sup> )
2.5	6 ft <sup>2</sup> (0.56 m <sup>2</sup> )	9 ft <sup>2</sup> (0.81 m <sup>2</sup> )	15 ft <sup>2</sup> (1.37 m <sup>2</sup> )
3.0	8 ft <sup>2</sup> (0.72 m <sup>2</sup> )	10 ft <sup>2</sup> (0.97 m <sup>2</sup> )	18 ft <sup>2</sup> (1.64 m <sup>2</sup> )
3.5	9 ft <sup>2</sup> (0.83 m <sup>2</sup> )	12 ft <sup>2</sup> (1.13 m <sup>2</sup> )	21 ft <sup>2</sup> (1.91 m <sup>2</sup> )
4.0	10 ft <sup>2</sup> (0.95 m <sup>2</sup> )	14 ft <sup>2</sup> (1.29 m <sup>2</sup> )	24 ft <sup>2</sup> (2.19 m <sup>2</sup> )
4.5	12 ft <sup>2</sup> (1.07 m <sup>2</sup> )	16 ft <sup>2</sup> (1.46 m <sup>2</sup> )	27 ft <sup>2</sup> (2.46 m <sup>2</sup> )
5.0	13 ft <sup>2</sup> (1.19 m <sup>2</sup> )	17 ft <sup>2</sup> (1.62 m <sup>2</sup> )	29 ft <sup>2</sup> (2.73 m <sup>2</sup> )
5.5	14 ft <sup>2</sup> (1.30 m <sup>2</sup> )	19 ft <sup>2</sup> (1.78 m <sup>2</sup> )	32 ft <sup>2</sup> (3.00 m <sup>2</sup> )
6.0	15 ft <sup>2</sup> (1.42 m <sup>2</sup> )	21 ft <sup>2</sup> (1.94 m <sup>2</sup> )	35 ft <sup>2</sup> (3.28 m <sup>2</sup> )

## Specifications

	PV-4 SERIES 3" SHELL			30 SERIES 4" SHELL			30 SERIES 10" SHELL			30 SERIES 14" SHELL
Model Number	40	80	180	105	220	440	218	525	1000	900
Tube Outside Diameter	.250" (6.35mm)	.175" (4.45mm)	.125" (3.18mm)	.250" (6.35mm)	.175" (4.45mm)	.125" (3.18mm)	.375" (9.52mm)	.250" (6.35mm)	.175" (4.45mm)	.250" (6.35mm)
Tube Wall Thickness	.025" (.635mm)	.017" (.44mm)	.012" (.318mm)	.025" (.635mm)	.017" (.44mm)	.012" (.318mm)	.037" (.953mm)	.025" (.635mm)	.0175" (.445mm)	.025" (.635mm)
Typical Heat Transfer Coefficient (U) FEP & PFA	25-60 BTU/Hr.-ft. <sup>2</sup> -°F (141-341 watts/m <sup>2</sup> -°K)			25-60 BTU/Hr.-ft. <sup>2</sup> -°F (141-341 watts/m <sup>2</sup> -°K)			30-60 BTU/Hr.-ft. <sup>2</sup> -°F (171-341 watts/m <sup>2</sup> -°K)			30-60 BTU/Hr.-ft. <sup>2</sup> -°F (171-341 watts/m <sup>2</sup> -°K)
Typical Heat Transfer Coefficient (U) Q	35-100 BTU/Hr.-ft. <sup>2</sup> -°F (199-567 watts/m <sup>2</sup> -°K)			35-100 BTU/Hr.-ft. <sup>2</sup> -°F (199-567 watts/m <sup>2</sup> -°K)			42-90 BTU/Hr.-ft. <sup>2</sup> -°F (238-511 watts/m <sup>2</sup> -°K)			—
Shell Diameter	3" (76.2 mm)			4" (101.6 mm)			10" (254 mm)			14" (355.6 mm)
Shell Construction †	CPVC			Carbon Steel, unlined or lined with TEFLON®			Carbon Steel, unlined or lined with TEFLON®			Carbon Steel, unlined or lined with TEFLON®
Nominal Lengths	2-6 ft. (.6-1.8 m)			3-11 ft. (.9-3.35 m)			2-24 ft. (.6-7.31 m)			2-24 ft. (.6-7.31 m)
Area for Heat Transfer	5.1-35.5 ft. <sup>2</sup> (.5-3.2 m <sup>2</sup> )			19.4-158 ft. <sup>2</sup> (1.8-14.7 m <sup>2</sup> )			43-1100 ft. <sup>2</sup> (4.0-108 m <sup>2</sup> )			102-1400 ft. <sup>2</sup>
Bundle Configuration	Braided or Cross Flow Baffle*			SS Basket or Cross Flow Baffle*			Cross Flow Baffle			Cross Flow Baffle

\* Special order bundle configuration.

† Typical shell construction. Special material such as PP, CPVC, stainless steel or other metal alloys, and fiberglass available by special order. Custom configurations also available.

**Niche**  
FLUOROPOLYMER PRODUCTS

42 MOUNTAIN AVENUE  
NESQUEHONING, PENNSYLVANIA, 18240-2201 U.S.A.  
TEL: +1 570-645-6917 • 800-441-7777 (U.S. and Canada only)  
FAX: +1 570-645-6950  
www.nichefpp.com  
E-mail: info@nichefpp.com

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1M617P (040072)

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Adequate ventilation should be used where fluoropolymers are heated during tube repairs. Flu-like symptoms occur from exposure to vapors evolved from fluoropolymers at very high temperatures, up to 800F or from smoking materials that contain particles of fluoropolymers. Symptoms pass within 48 hours and are only adverse effects observed in humans to date. Unheated fluoropolymers are essentially inert and are irritating to the skin.

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