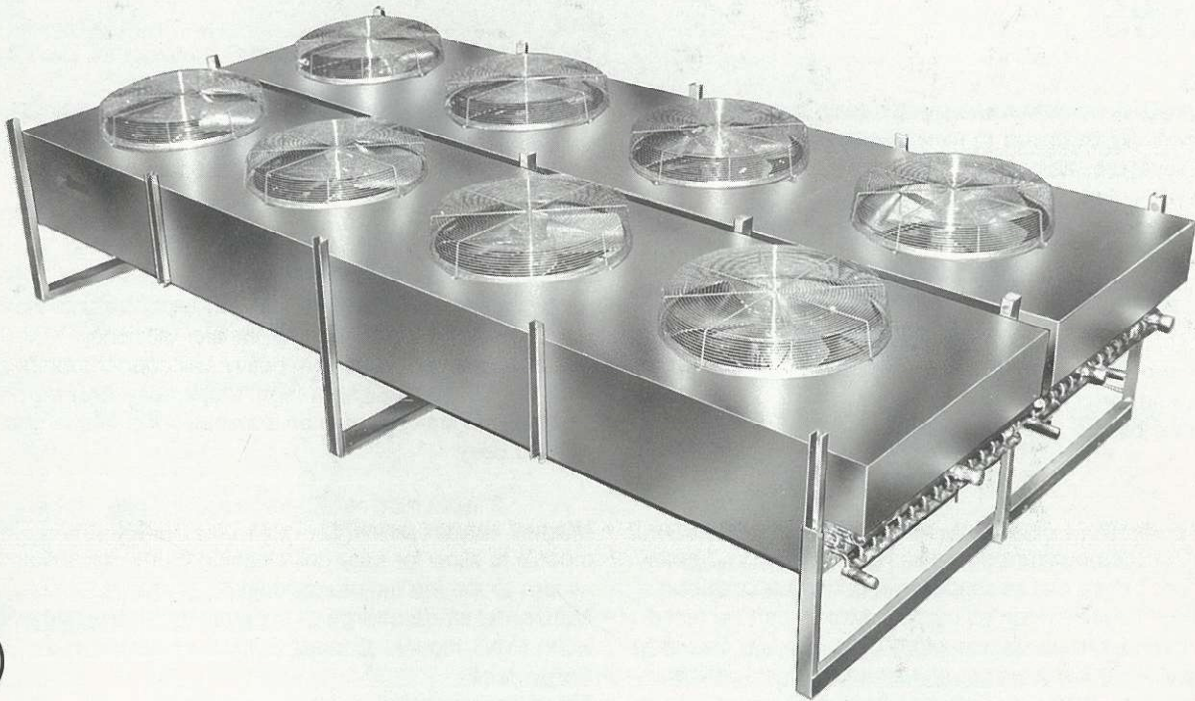


***Air Cooled  
Fluid Cooler***

**Catalog 410.2  
May 1990**

**5 thru 144  
Nominal tons  
Vertical and  
Horizontal**

# General

Russell's Multicon fluid coolers are designed to provide the optimum in heat transfer efficiency and are constructed for years of reliable performance. Available in 33 sizes, the Multicon fluid coolers range in capacity from 5 to 144 nominal tons. Only the highest grades of commercially available aluminum, copper and galvanized steel go into the manufacturing of each Multicon air cooled fluid cooler. After assembly every unit is closely inspected before it is securely crated to ensure trouble free installation and operation.

# Features

## FAN / MOTOR

- All fans are sized for maximum energy efficiency, minimum noise, and are individually balanced to minimize vibration.
- All models have die stamped aluminum blades riveted to a galvanized steel spider assembly.
- Fan guards are fabricated from heavy gauge steel wire and epoxy coated
- On multiple fan units, all fans are baffled to prevent short-circuiting of air during fan cycling.
- All FVAC motor assemblies are supported in all-welded, heavy gauge wire support structures. The wire structures are zinc-chromate coated for corrosion protection.
- All motors have built in thermal protection.

- Motors are available in the following voltages:  
FVAC 5 thru 19 - 208/230/1/60, psc. Optional 460/1/60, 230/3/60 or 460/3/60.  
FVAC 22 thru 144 - 208/230/460/3/60, open drip-proof.

## COILS

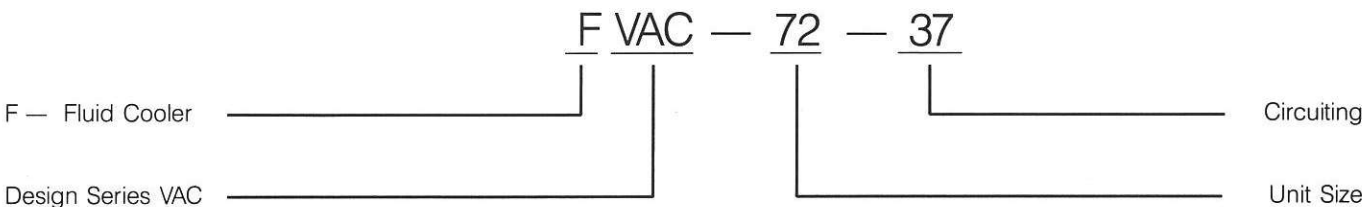
- Coil fins are manufactured from die formed corrugated aluminum. The tubes are seamless 1/2" OD copper, arranged in a staggered pattern and mechanically expanded into the fins and tube sheets for optimum heat transfer efficiency.
- Headers are produced from heavy wall copper tubing, and are brazed to the coil using a high temperature brazing process.
- All coils are leak tested in an illuminated test tank at a pressure of 380 psig.

## OPTIONS

- **Fan cycling control** — available with contactors and either ambient or fluid temperature sensors. Fan cycling, on double width FVAC unit motors can be supplied with individual contactors.
- **Motor fusing** — available on all models. Motors can be fused individually or in pairs on double width units (not U.L. listed).
- **Fins** — available in four options; aluminum, copper, polyester coated aluminum, and baked phenolic coated aluminum.

- **Hinged venturi panel(s)** — can be provided on all FVAC models to allow for easy coil cleaning of the coil fins and quick access to the fan/motor assembly.
- **Horizontal air discharge** — available upon request for all single width FVAC models. Contact Russell for details.
- **Surge tank**
- **Fill valve assembly**

# Nomenclature



# Formulas

Eq.(1) Average Fluid Temp. = 
$$\frac{(\text{Ent. Fluid Temp.} + \text{Lvg. Fluid Temp.})}{2}$$

Eq.(4) Base Capacity (MBh/F) = 
$$\frac{\text{Design Load (Btu/hr)}}{1000 \times \text{TD} \times \text{Cap. Corr. Factor} \times \text{Alt. Corr. Factor}}$$

Eq.(2) Design Load (Btu/HR) = 
$$500 \times \text{GPM} \times (\text{SpHt} \times \text{SpGr}) \times (\text{Ent. Fluid Temp.} - \text{Lvg. Fluid Temp.})$$

Eq.(5) Actual Capacity = 
$$\text{Catalog Cap.} \times 1000 \times \text{TD} \times \text{Cap. Corr. Factor} \times \text{Alt. Corr. Factor}$$

Eq.(3) TD = Ent. Fluid Temp. — Ent. Air Temp.

Eq. (6) Actual Pressure Drop = 
$$\text{Catalog Pressure Drop} \times \text{Pressure Drop Corr. Factor}$$



## Selections

### Given:

Altitude . . . . . 5000 ft.  
 Ambient Temperature . . . . . 100°F  
 Entering Fluid Temperature . . . . . 140°F  
 Leaving Fluid Temperature . . . . . 120°F  
 Flow Rate . . . . . 80 GPM  
 Ethylene Glycol Solution . . . . . 30%  
 Maximum Fluid Temperature Pressure Drop . . . . . 15 ft. wg.

- Calculate the average fluid temperature using equation number 1.  

$$\text{Average Fluid Temp.} = \frac{(140^\circ\text{F} + 120^\circ\text{F})}{2}$$

Average Fluid Temp. = 130°F
- Calculate the design load using equation number 2.  

$$\text{Design Load (Btu/hr)} = 500 \times 80 \times .940 \times (140^\circ\text{F} - 120^\circ\text{F})$$

$$\text{Design Load (Btu/hr)} = 752,000 \text{ Btu/hr}$$
- Calculate the fluid temp. difference (TD) using equation number 3.  

$$\text{TD} = 140^\circ\text{F} - 100^\circ\text{F}$$

$$\text{TD} = 40^\circ\text{F}$$
- Determine the capacity correction factor from table 2.  
 Capacity correction factor = 1.027
- Determine the altitude correction factor from table 5.  
 Altitude correction factor = .89
- Calculate the base capacity using equation number 4.  

$$\text{Base capacity (MBh/}^\circ\text{F)} = \frac{752,000}{1000 \times 40 \times 1.027 \times .89}$$

Base capacity (MBh/°F) = 20.57
- Using the performance tables number 6, select a model that meets or exceeds the required base capacity at the required fluid flow rate. Model FVAC-62 with 30 circuits will meet the capacity and maximum pressure drop requirements.
- Correct the fluid pressure drop using equation number 6.  

$$\text{Actual Pressure Drop} = 13.6 \times .963$$

$$\text{Actual Pressure Drop} = 13.1 \text{ ft.wg.}$$
- Calculate the actual unit rating using equation number 5.  

$$\text{Actual Capacity} = 21.54 \times 1000 \times 40 \times 1.027 \times .89$$

$$\text{Actual Capacity} = 787,528 \text{ Btu/hr}$$
- Select the header connection size from Table 8. 2½" headers with the same size mpt connections will be required.

## Correction Factors

**TABLE 1**

**SPECIFIC HEAT x SPECIFIC GRAVITY (Sp Ht x Sp gr)**

% GLYCOL CONCENTRATION	AVERAGE FLUID TEMP.					
	90	100	110	120	130	140
0	1.000	1.000	1.000	1.000	1.000	1.000
20	.967	.967	.967	.967	.966	.965
30	.936	.937	.938	.939	.940	.941
40	.887	.891	.894	.897	.899	.901
50	.854	.859	.862	.866	.869	.872

**TABLE 3**

**PRESSURE DROP CORRECTION FACTOR**

% GLYCOL CONCENTRATION	AVERAGE FLUID TEMP.					
	90	100	110	120	130	140
0	0.869	0.860	0.850	0.841	0.832	0.813
20	0.991	0.963	0.944	0.925	0.907	0.897
30	1.075	1.037	1.009	0.981	0.963	0.944
40	1.121	1.084	1.056	1.028	1.000	0.981
50	1.178	1.140	1.103	1.075	1.056	1.037

**TABLE 2**

**CAPACITY CORRECTION FACTOR**

% GLYCOL CONCENTRATION	AVERAGE FLUID TEMP.					
	90	100	110	120	130	140
0	1.069	1.074	1.078	1.083	1.089	1.093
20	1.026	1.031	1.040	1.046	1.051	1.057
30	0.998	1.005	1.012	1.021	1.027	1.033
40	0.966	0.974	0.984	0.992	1.000	1.007
50	0.930	0.939	0.951	0.961	0.970	0.979

**TABLE 4**

**FREEZING POINT OF ETHYLENE GLYCOL**

% GLYCOL CONCENTRATION	FREEZING TEMPERATURE	BOILING TEMPERATURE
20	16	216
30	4	220
40	-12	223
50	-35	226

**TABLE 5**

**ALTITUDE CORRECTION FACTOR (ft)**

ALTITUDE FACTOR	SEA LEVEL	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
	1.0	0.98	0.96	0.93	0.91	0.89	0.86	0.84	0.82	0.79	0.77

# Performance

**TABLE 6 — FLUID COOLER CAPACITIES (MBh/°F)**

UNIT SIZE	CIRCUITS	Flow (GPM)															
		10		20		30		40		50		60		70		80	
		MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.
FVAC-5	6	1.91	3.9	2.32	11.8	2.49	21.9										
FVAC-5	10	1.75	0.9	2.18	3.5	2.39	6.7	2.51	10.6	2.58	13.4	2.63	19.7				
FVAC-5	15	1.58	0.4	2.05	1.7	2.27	3.4	2.40	3.6	2.49	5.8	2.55	7.3	2.60	8.9	2.64	9.7
FVAC-5	30	1.13	0.6	1.73	0.8	1.99	1.9	2.15	1.5	2.26	2.2	2.35	1.8	2.41	2.3	2.46	2.9
FVAC-6	6	2.08	3.9	2.56	11.8	2.77	21.9										
FVAC-6	10	1.88	0.9	2.39	3.5	2.63	6.7	2.78	10.6	2.87	13.4	2.94	19.7				
FVAC-6	15	1.70	0.4	2.23	1.7	2.50	3.4	2.65	3.6	2.76	5.8	2.84	7.3	2.89	8.9	2.94	9.7
FVAC-6	30	1.19	0.6	1.86	0.8	2.16	1.9	2.35	1.5	2.49	2.2	2.59	1.8	2.67	2.3	2.73	2.9
FVAC-7	9	2.25	1.8	2.79	5.9	3.03	12.5	3.17	19.6	3.25	23.3						
FVAC-7	15	2.03	0.4	2.61	2.2	2.89	4.3	3.05	4.9	3.13	7.9	3.21	10.4	3.28	12.7	3.31	13.7
FVAC-7	22	1.84	0.6	2.44	1.1	2.73	2.7	2.91	2.6	3.01	3.6	3.11	3.7	3.19	5.1	3.23	6.9
FVAC-7	45			2.01	0.9	2.35	1.7	2.56	1.1	2.72	1.8	2.83	1.4	2.92	1.9	2.99	2.4
FVAC-8	15	2.37	0.5	3.03	2.7	3.35	5.2	3.52	6.3	3.61	10.0	3.71	13.6	3.74	16.5	3.80	17.7
FVAC-8	20	2.22	0.6	2.91	1.5	3.22	3.5	3.42	3.6	3.54	5.1	3.63	5.9	3.69	8.4	3.73	11.1
FVAC-8	30	1.82	0.9	2.68	0.9	3.02	2.1	3.25	2.0	3.38	2.9	3.47	2.7	3.57	3.4	3.63	4.2
FVAC-8	60			2.01	1.1	2.60	1.8	2.86	1.1	3.02	1.6	3.17	1.2	3.27	1.6	3.36	2.1
FVAC-9	15	2.49	0.5	3.22	2.7	3.56	5.2	3.75	6.3	3.86	10.0	3.94	13.6	4.00	16.5	4.04	17.7
FVAC-9	20	2.32	0.6	3.07	1.5	3.43	3.5	3.64	3.6	3.78	5.1	3.87	5.9	3.92	8.4	3.99	11.1
FVAC-9	30	1.89	0.9	2.84	0.9	3.22	2.1	3.45	2.0	3.61	2.9	3.72	2.7	3.80	3.4	3.87	4.2
FVAC-9	60			2.09	1.1	2.74	1.8	3.02	1.1	3.22	1.6	3.35	1.2	3.47	1.6	3.56	2.1
FVAC-11	6	3.31	6.3	4.53	18.7												
FVAC-11	10	3.07	1.4	4.27	5.2	4.86	10.0	5.26	16.8	5.48	21.1						
FVAC-11	15	2.82	0.5	4.00	2.4	4.61	4.6	5.02	5.3	5.26	8.5	5.48	11.4	5.63	13.9	5.74	15.0
FVAC-11	30	2.07	0.8	3.38	0.9	4.01	2.0	4.46	1.8	4.75	2.7	4.99	2.4	5.18	3.0	5.32	3.8
FVAC-13	9	3.52	2.9	4.93	9.2	5.57	19.5										
FVAC-13	15	3.27	0.6	4.63	3.2	5.28	6.1	5.74	7.5	5.99	12.1	6.19	16.7	6.36	20.2	6.48	21.6
FVAC-13	22	3.02	0.8	4.34	1.3	5.05	3.4	5.48	3.7	5.79	5.0	6.01	5.6	6.14	7.7	6.31	10.4
FVAC-13	45			3.65	1.1	4.37	1.8	4.85	1.2	5.18	2.0	5.45	1.7	5.66	2.3	5.82	2.9
FVAC-15	9	3.68	2.9	5.26	9.2	6.07	19.5										
FVAC-15	15	3.41	0.6	4.92	3.2	5.72	6.1	6.22	7.5	6.49	12.1	6.75	16.7	6.93	20.2	7.01	21.6
FVAC-15	22	3.15	0.8	4.60	1.3	5.41	3.4	5.88	3.7	6.26	5.0	6.51	5.6	6.70	7.7	6.85	10.4
FVAC-15	45			3.82	1.1	4.64	1.8	5.19	1.2	5.58	2.0	5.87	1.7	6.11	2.3	6.30	2.9
FVAC-17	15	3.79	0.8	5.61	4.0	6.50	7.6	7.02	9.7	7.41	15.6	7.64	21.9	7.82	26.5	7.88	28.3
FVAC-17	20	3.61	0.9	5.36	1.9	6.30	4.7	6.83	5.4	7.16	7.4	7.42	9.2	7.67	13.1	7.80	17.3
FVAC-17	30	3.08	1.4	4.97	1.0	5.87	2.4	6.49	2.6	6.90	3.9	7.19	3.9	7.33	4.8	7.58	6.0
FVAC-17	60			3.76	1.3	5.02	1.9	5.68	1.1	6.10	1.7	6.43	1.3	6.74	1.9	6.95	2.4
FVAC-19	15	4.05	0.9	6.07	4.9	7.04	9.1	7.61	11.9	7.99	19.2	8.15	27.1				
FVAC-19	25	3.75	1.4	5.68	1.3	6.67	3.6	7.24	4.3	7.66	5.9	7.93	6.4	8.12	8.4	8.28	11.2
FVAC-19	37			5.24	1.1	6.25	2.1	6.86	2.0	7.29	3.2	7.62	3.2	7.80	4.1	8.03	4.9
FVAC-19	75					5.31	2.1	5.98	1.2	6.50	1.7	6.83	1.1	7.15	1.6	7.37	2.1
FVAC-22	9	4.25	4.2	6.78	13.2	8.20	27.8										
FVAC-22	15	4.06	0.8	6.44	4.4	7.83	8.2	8.73	10.6	9.33	17.1	9.78	24.1	10.16	29.2		
FVAC-22	22	3.86	1.1	6.08	1.6	7.43	4.2	8.33	5.0	8.97	6.7	9.45	7.8	9.82	10.8	10.12	14.6
FVAC-22	45			5.24	1.2	6.50	1.9	7.39	1.4	8.05	2.3	8.59	2.1	8.98	2.8	9.33	3.5
FVAC-25	9	4.39	4.2	7.27	13.2	8.96	27.8										
FVAC-25	15	4.21	0.8	6.88	4.4	8.54	8.2	9.59	10.6	10.37	17.1	10.96	24.1	11.40	29.2		
FVAC-25	22	3.99	1.1	6.50	1.6	8.10	4.2	9.18	5.0	9.92	6.7	10.55	7.8	11.01	10.8	11.28	14.6
FVAC-25	45			5.54	1.2	6.99	1.9	8.04	1.4	8.83	2.3	9.42	2.1	9.91	2.8	10.37	3.5
FVAC-29	9	4.49	4.2	7.63	13.2	9.58	27.8										
FVAC-29	15	4.29	0.8	7.22	4.4	9.08	8.2	10.29	10.6	11.21	17.1	11.86	24.1	12.35	29.2		
FVAC-29	22	4.10	1.1	6.81	1.6	8.55	4.2	9.79	5.0	10.68	6.7	11.39	7.8	11.93	10.8	12.28	14.6
FVAC-29	45			5.77	1.2	7.35	1.9	8.54	1.4	9.40	2.3	10.09	2.1	10.70	2.8	11.18	3.5
FVAC-31	15	4.47	1.1	7.60	5.6	9.56	10.4	10.81	13.9	11.79	22.3						
FVAC-31	20	4.36	1.2	7.30	2.5	9.28	6.2	10.52	7.5	11.48	10.2	12.09	13.1	12.66	18.7	12.98	24.8
FVAC-31	30	3.94	2.0	6.85	1.2	8.72	2.8	10.01	3.4	10.88	5.0	11.57	5.3	12.17	6.5	12.50	8.1
FVAC-31	60			5.40	1.6	7.55	2.0	8.74	1.2	9.64	1.8	10.40	1.5	10.99	2.1	11.46	2.8



## Performance

**TABLE 6 (cont.) — FLUID COOLER CAPACITIES (MBh/°F)**

UNIT SIZE	CIRCUITS	Flow (GPM)																	
		10		20		30		40		50		60		70		80			
		MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.	MBh/°F	P.D.		
FVAC-35	15	4.65	1.3	8.38	6.8	10.92	12.6	12.57	17.1	13.72	27.5								
FVAC-35	25	4.49	2.0	7.94	1.6	10.34	4.5	11.92	5.9	13.16	8.1	13.90	9.1	14.52	11.8	15.07	15.8		
FVAC-35	37			7.49	1.3	9.71	2.3	11.31	2.5	12.50	4.0	13.31	4.3	13.91	5.4	14.49	6.5		
FVAC-35	75					8.29	2.3	9.76	1.3	10.90	1.7	11.80	1.2	12.51	1.7	13.07	2.3		
FVAC-42	9			8.71	18.5														
FVAC-42	15	4.63	1.1	8.48	6.0	11.38	11.0	13.43	14.8	15.00	23.8								
FVAC-42	22	4.50	1.5	8.15	2.0	10.89	5.4	12.79	6.7	14.44	8.9	15.59	10.7	16.54	14.9	17.35	20.2		
FVAC-42	45			7.24	1.4	9.62	2.0	11.38	1.6	12.78	2.6	14.02	2.6	14.93	3.5	15.71	4.3		
FVAC-48	15	4.69	1.4	8.77	7.7	11.88	14.2	14.10	19.4										
FVAC-48	20	4.66	1.7	8.62	3.3	11.60	8.1	13.77	10.3	15.43	13.9	16.64	18.4	17.60	26.2				
FVAC-48	30	4.43	2.8	8.25	1.4	11.08	3.3	13.15	4.4	14.76	6.5	15.99	7.2	16.93	8.7	17.70	10.8		
FVAC-48	60			6.88	2.0	9.82	2.1	11.71	1.3	13.19	2.0	14.44	1.8	15.44	2.5	16.21	3.4		
FVAC-55	15			9.04	9.4	12.56	17.3	15.14	24.0										
FVAC-55	25	4.70	2.9	8.84	2.0	12.13	5.8	14.57	8.1	16.40	10.9	17.91	12.6	18.92	16.4	19.83	21.9		
FVAC-55	37			8.54	1.6	11.51	2.5	13.97	3.1	15.77	5.1	17.10	5.8	18.21	7.2	19.19	8.5		
FVAC-55	75					10.32	2.5	12.38	1.4	14.03	1.8	15.44	1.3	16.45	1.9	17.45	2.6		
FVAC-58	9			9.17	23.8														
FVAC-58	15			9.03	7.5	12.64	13.9	15.34	19.0										
FVAC-58	22	4.61	1.9	8.81	2.4	12.22	6.5	14.93	8.4	17.05	11.2	18.81	13.7	20.13	19.0	21.28	25.8		
FVAC-58	45			8.13	1.6	11.10	2.0	13.53	1.7	15.47	3.0	17.05	3.2	18.33	4.2	19.45	5.2		
FVAC-62	15			9.19	9.8	12.99	17.9	16.01	25.0										
FVAC-62	20			9.11	4.0	12.80	10.0	15.70	13.2	17.98	17.7	19.79	23.7						
FVAC-62	30	4.62	3.6	8.89	1.5	12.39	3.8	15.20	5.5	17.35	8.0	19.13	9.0	20.54	11.0	21.54	13.6		
FVAC-62	60			7.86	2.4	11.23	2.3	13.75	1.4	15.78	2.1	17.44	2.0	18.80	2.9	19.92	3.9		
FVAC-67	15			9.41	12.1	13.45	22.0												
FVAC-67	25			9.18	2.4	13.18	7.0	16.43	10.2	19.06	13.7	21.14	16.1	22.76	20.9	24.06	28.0		
FVAC-67	37			9.03	1.8	12.86	2.8	15.89	3.8	18.31	6.2	20.43	7.3	22.01	9.0	23.38	10.6		
FVAC-67	75					11.77	2.8	14.46	1.5	16.69	1.9	18.57	1.5	20.12	2.1	21.40	2.9		
FVAC-72	15					13.68	22.0												
FVAC-72	25			9.35	2.4	13.41	7.0	17.02	10.2	19.73	13.7	22.13	16.1	23.95	20.9	25.54	28.0		
FVAC-72	37			9.21	1.8	13.13	2.8	16.46	3.8	19.09	6.2	21.17	7.3	23.19	9.0	24.72	10.6		
FVAC-72	75					12.05	2.8	14.94	1.5	17.29	1.9	19.21	1.5	21.06	2.1	22.53	2.9		
		<b>Flow (GPM)</b>																	
		<b>50</b>		<b>75</b>		<b>100</b>		<b>150</b>		<b>200</b>		<b>250</b>		<b>300</b>		<b>350</b>			
FVAC-55	25	16.40	10.9	19.48	18.9														
FVAC-55	37	15.77	5.1	18.73	7.8	20.46	10.8	22.48	24.4										
FVAC-55	75	14.03	1.8	16.94	2.3	18.85	3.0	21.14	4.7	22.37	6.2	23.27	9.9	23.81	14.6	24.34	18.2		
FVAC-58	22	17.05	11.2	20.69	22.3														
FVAC-58	45	15.47	3.0	18.94	4.7	21.28	5.8	24.17	11.2	25.77	18.2	26.73	21.9						
FVAC-62	20	17.98	17.7																
FVAC-62	30	17.35	8.0	21.08	12.2	23.49	20.6												
FVAC-62	60	15.78	2.1	19.40	3.4	21.82	4.5	24.54	6.9	26.43	11.3	27.38	17.9	28.32	21.3	28.84	28.3		
FVAC-67	25	19.06	13.7	23.45	24.2														
FVAC-67	37	18.31	6.2	22.67	9.8	25.38	13.7												
FVAC-67	75	16.69	1.9	20.75	2.5	23.45	3.5	26.77	5.6	28.73	7.6	29.97	12.2	30.79	18.0	31.47	22.2		
FVAC-72	25	19.73	13.7	24.79	24.2														
FVAC-72	37	19.09	6.2	24.00	9.8	26.96	13.7												
FVAC-72	75	17.29	1.9	21.85	2.5	24.76	3.5	28.25	5.6	30.58	7.6	31.93	12.2	32.91	18.0	33.55	22.2		
FVAC-59	18	17.47	18.5																
FVAC-59	30	16.45	6.4	20.15	9.5	22.42	17.1	25.14	30.0										
FVAC-59	44	15.47	2.9	19.06	4.5	21.36	6.7	24.18	12.6	25.94	19.9	26.92	24.7						
FVAC-59	90	13.28	1.4	16.51	1.2	18.79	2.3	21.77	3.2	23.78	3.7	25.10	5.4	26.03	6.7	26.79	9.4		
FVAC-63	30	17.43	8.2	21.17	12.4	23.58	22.3												
FVAC-63	40	16.84	4.3	20.52	6.9	22.97	10.2	25.72	21.8	27.15	29.8								
FVAC-63	60	15.86	1.8	19.50	3.0	21.77	5.0	24.64	7.2	26.28	11.6	27.49	18.4	28.37	20.5	28.95	27.2		
FVAC-63	120	13.55	1.7	17.01	1.1	19.28	1.8	22.32	2.5	24.42	3.0	25.73	4.2	26.66	4.4	27.39	5.9		

# Performance

TABLE 6 (cont.) — FLUID COOLER CAPACITIES (MBh/°F)

UNIT SIZE	CIRCUITS	Flow (GPM)		50		75		100		150		200		250		300		350			
		MBh/°F		P.D.		MBh/°F		P.D.		MBh/°F		P.D.		MBh/°F		P.D.		MBh/°F		P.D.	
FVAC-68	30	18.80	9.9	23.14	15.3	25.90	27.4														
FVAC-68	50	17.76	2.9	22.09	5.3	24.78	8.0	28.00	13.6	29.58	24.3										
FVAC-68	74	16.71	1.6	20.83	2.1	23.49	4.0	26.68	5.9	28.83	7.9	30.04	12.8	30.90	17.5	31.56	21.0				
FVAC-68	150	13.21	2.0	18.08	1.2	20.71	1.7	24.17	2.0	26.48	2.5	27.95	3.7	28.98	3.7	29.81	4.7				
FVAC-73	30	19.60	9.9	24.50	15.3	27.44	27.4														
FVAC-73	50	18.46	2.9	23.18	5.3	26.31	8.0	29.81	13.6	31.65	24.3										
FVAC-73	74	17.41	1.6	21.95	2.1	25.00	4.0	28.49	5.9	30.70	7.9	32.07	12.8	32.93	17.5	33.63	21.0				
FVAC-73	150	13.55	2.0	18.86	1.2	21.79	1.7	25.56	2.0	27.82	2.5	29.56	3.7	30.85	3.7	31.47	4.7				
FVAC-83	30	20.11	8.7	25.92	13.2	30.00	23.8														
FVAC-83	44	19.21	3.6	24.92	6.1	28.89	8.9	33.96	17.4	36.82	27.9										
FVAC-83	90	17.04	1.5	22.04	1.3	25.56	2.6	30.82	3.9	34.08	4.8	36.28	6.9	37.78	8.9	39.04	12.5				
FVAC-95	30	20.90	11.2	27.16	17.4																
FVAC-95	40	20.35	5.7	26.59	9.6	30.86	13.9														
FVAC-95	60	19.50	2.1	25.38	3.9	29.53	6.5	34.70	9.7	37.99	16.1	39.96	25.5	41.28	28.7						
FVAC-95	120	17.41	1.9	22.59	1.2	26.39	2.0	31.63	2.9	35.01	3.8	37.42	5.2	38.77	5.7	40.36	7.6				
FVAC-102	30	21.88	13.7	29.16	21.5																
FVAC-102	50	21.04	3.7	28.08	7.3	32.81	10.9	38.96	18.9												
FVAC-102	74	20.34	1.8	26.82	2.6	31.54	5.1	37.47	7.8	40.91	10.8	43.58	17.5	44.96	24.4	46.02	29.2				
FVAC-102	150	16.98	2.4	23.85	1.4	28.07	1.8	33.88	2.3	37.70	3.0	40.24	4.5	42.27	4.6	43.74	5.8				
FVAC-116	30	21.95	10.9	29.58	17.0																
FVAC-116	44	21.28	4.4	28.58	7.7	34.09	11.1	41.37	22.2												
FVAC-116	90	19.39	1.6	25.72	1.5	30.94	3.0	37.88	4.7	42.56	5.8	45.71	8.4	48.34	11.2	50.15	15.7				
FVAC-127	30	22.41	14.2	30.73	22.4																
FVAC-127	40	22.06	7.1	30.09	12.2	35.97	17.6														
FVAC-127	60	21.48	2.4	28.92	4.8	34.70	8.0	42.17	12.2	46.97	20.5										
FVAC-127	120	19.68	2.2	26.38	1.3	31.56	2.1	38.80	3.4	43.63	4.5	46.99	6.2	49.07	6.9	51.15	9.2				
FVAC-134	30	23.08	17.5	32.29	27.7																
FVAC-134	50	22.70	4.4	31.31	9.2	38.13	13.7	46.90	24.1												
FVAC-134	74	22.08	2.0	30.09	3.2	36.62	6.2	45.34	9.8	50.77	13.7	54.49	22.1								
FVAC-134	150	19.24	2.8	27.67	1.5	33.38	1.9	41.50	2.5	46.91	3.5	50.81	5.2	53.54	5.6	55.82	7.0				
FVAC-144	30	23.13	17.5	33.28	27.7																
FVAC-144	50	22.99	4.4	31.95	9.2	39.47	13.7	49.58	24.1												
FVAC-144	74	22.34	2.0	31.36	3.2	38.18	6.2	48.01	9.8	53.92	13.7	58.03	22.1								
FVAC-144	150	19.71	2.8	28.51	1.5	34.57	1.9	43.69	2.5	49.52	3.5	53.65	5.2	56.51	5.6	59.21	7.0				

- Notes: (1) All units are same end connections.  
 (2) Capacities are based on 130°F average fluid temperature, @ 95°F ambient using 40% ethylene glycol.  
 (3) Contact Russell for special applications.

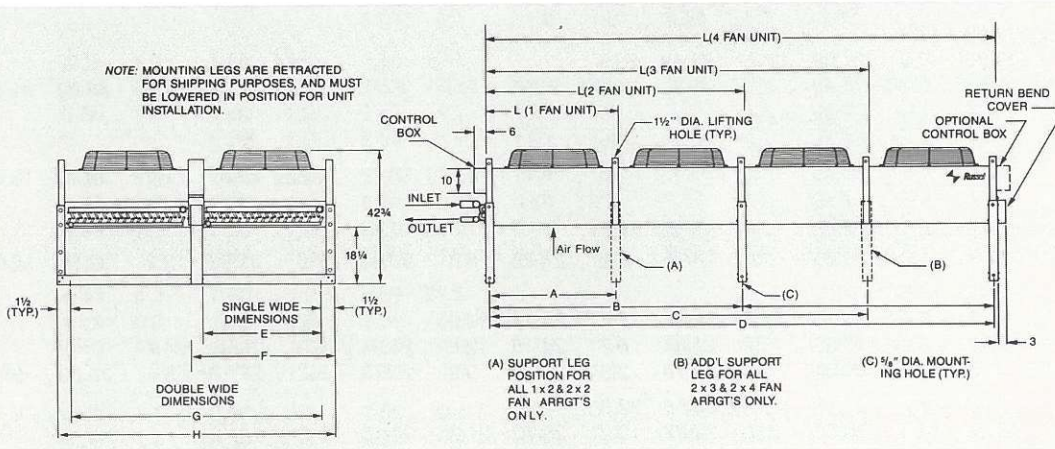


FIGURE 1



## Physical Data

**TABLE 7**

MODEL	DIMENSIONS										FAN DATA			APPRX NET WT (LBS)	COIL VOL. (GAL)	MOTOR HP	MOTOR RPM	TOTAL MOTOR AMPS			
	L	A	B	C	D	E	F	G	H	QTY	DIAM.	TOTAL CFM	SINGLE PHASE					THREE PHASE			
													208/230					460V	208/230	460V	
FVAC-5	32-1/4	30				45	48			1	24	5200	220	2.2	1/2	1075	4.2	2.1	4.0	2.0	
FVAC-6	32-1/4	30				45	48			1	24	5100	245	2.2	1/2	1075	4.2	2.1	4.0	2.0	
FVAC-7	32-1/4	30				45	48			1	24	5000	270	3.0	1/2	1075	4.2	2.1	4.0	2.0	
FVAC-8	32-1/4	30				45	48			1	24	4900	295	3.8	1/2	1075	4.2	2.1	4.0	2.0	
FVAC-9	32-1/4	30				45	48			1	24	4800	305	3.8	1/2	1075	4.2	2.1	4.0	2.0	
FVAC-11	62-1/4	30	60			45	48			2	24	10400	340	3.6	1/2	1075	8.4	4.2	8.0	4.0	
FVAC-13	62-1/4	30	60			45	48			2	24	10200	355	5.1	1/2	1075	8.4	4.2	8.0	4.0	
FVAC-15	62-1/4	30	60			45	48			2	24	10000	370	5.1	1/2	1075	8.4	4.2	8.0	4.0	
FVAC-17	62-1/4	30	60			45	48			2	24	9600	400	6.7	1/2	1075	8.4	4.2	8.0	4.0	
FVAC-19	62-1/4	30	60			45	48			2	24	9600	420	8.2	1/2	1075	8.4	4.2	8.0	4.0	
FVAC-22	96-1/4	48	96			45	48			2	30	22000	465	7.7	1-1/2	1140			12.8	6.4	
FVAC-25	96-1/4	48	96			45	48			2	30	21500	495	7.7	1-1/2	1140			12.8	6.4	
FVAC-29	96-1/4	48	96			45	48			2	30	21000	520	7.7	1-1/2	1140			12.8	6.4	
FVAC-31	96-1/4	48	96			45	48			2	30	20500	550	10.0	1-1/2	1140			12.8	6.4	
FVAC-35	96-1/4	48	96			45	48			2	30	20000	600	12.4	1-1/2	1140			12.8	6.4	
FVAC-42	146-1/4		96	144		45	48			3	30	32000	800	11.1	1-1/2	1140			19.2	9.6	
FVAC-48	146-1/4		96	144		45	48			3	30	31500	900	14.6	1-1/2	1140			19.2	9.6	
FVAC-55	146-1/4		96	144		45	48			3	30	31000	1000	18.1	1-1/2	1140			19.2	9.6	
FVAC-58	194-1/4		96	144	192	45	48			4	30	42000	1050	14.5	1-1/2	1140			25.6	12.8	
FVAC-62	194-1/4		96	144	192	45	48			4	30	41000	1100	19.1	1-1/2	1140			25.6	12.8	
FVAC-67	194-1/4		96	144	192	45	48			4	30	40500	1150	23.7	1-1/2	1140			25.6	12.8	
FVAC-72	194-1/4		96	144	192	45	48			4	30	40000	1200	23.7	1-1/2	1140			25.6	12.8	
FVAC-59	96-1/4	48	96					93	96	4	30	42000	1080	15.4	1-1/2	1140			25.6	12.8	
FVAC-63	96-1/4	48	96					93	96	4	30	41000	1140	20.1	1-1/2	1140			25.6	12.8	
FVAC-68	96-1/4	48	96					93	96	4	30	40500	1190	24.9	1-1/2	1140			25.6	12.8	
FVAC-73	96-1/4	48	96					93	96	4	30	40000	1240	24.9	1-1/2	1140			25.6	12.8	
FVAC-83	146-1/4		96	144				93	96	6	30	64000	1640	22.2	1-1/2	1140			38.4	19.2	
FVAC-95	146-1/4		96	144				93	96	6	30	63000	1840	29.2	1-1/2	1140			38.4	19.2	
FVAC-102	146-1/4		96	144				93	96	6	30	62000	2050	36.2	1-1/2	1140			38.4	19.2	
FVAC-116	194-1/4		96	144	192			93	96	8	30	84000	2150	29.0	1-1/2	1140			51.2	25.6	
FVAC-127	194-1/4		96	144	192			93	96	8	30	82000	2250	38.3	1-1/2	1140			51.2	25.6	
FVAC-134	194-1/4		96	144	192			93	96	8	30	81000	2350	47.5	1-1/2	1140			51.2	25.6	
FVAC-144	194-1/4		96	144	192			93	96	8	30	80000	2460	47.5	1-1/2	1140			51.2	25.6	

**TABLE 8**

**HEADER CONNECTION SIZES**

FLOW RATE (GPM)	SINGLE WIDTH MODELS	DOUBLE WIDTH MODELS
	FVAC-5 TO 58,62,67,72	FVAC-59,63,68,73 TO 144
1 TO 34	1-1/2"	(2) 1-1/2"
35 TO 59	2"	(2) 1-1/2"
60 TO 90	2-1/2"	(2) 2"
91 TO 129	3"	(2) 2-1/2"
139 TO 175	3-1/2"	(2) 3"
176 TO 259	4"	(2) 3-1/2"
260 TO 360	4"	(2) 4"

NOTE: 1) ALL CONNECTIONS ARE MALE PIPE THREAD (MPT).  
 2) SUPPLY AND RETURN CONNECTIONS ARE THE SAME SIZE.

