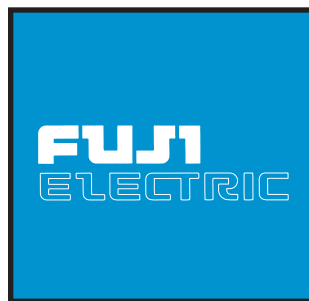


Fuji Electric, established in 1923, is a world leader in the electric and electronics industries. Originally a heavy electrical equipment manufacturer, Fuji Electric has grown to include power and energy systems, industrial and electrical controls, electronics, information processing, semiconductors, process and factory automation equipment, robot control systems, fuel cells and vending machines.

In 1963, Fuji Electric introduced a line of Ring-Compressors in Japan, followed in 1970 by their introduction in the United States. This product was intended to meet the increasing needs of sophisticated equipment for substantial volumes of oil-free compressed air and vacuum at low to moderate pressures. Since that time, these units have gained an unexcelled reputation for performance, reliability and quality in thousands of applications, and in all types of environments. They have been constantly improved to meet even more demanding performance and environmental specifications.

This catalog introduces the latest series of Ring-Compressors manufactured by Fuji. While general performance specifications remain unchanged, these new series meet the need of increasingly stringent noise requirements, with quieter operating units.

Fuji Electric maintains worldwide sales and service facilities to provide the fastest possible response to calls for applications assistance as well as customer service. If any further information regarding any of the material in this catalog is necessary, our sales representatives will be only too happy to provide assistance.



# PRINCIPLES OF OPERATION AND CONSTRUCTION

## PRINCIPLES OF OPERATION

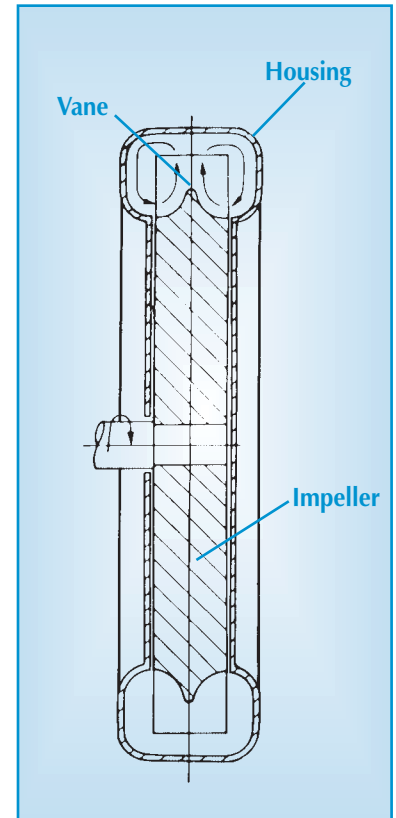
The Fuji Ring Compressor is a non-positive displacement, high volume, low pressure blower that can operate as either a compressor or a vacuum pump. It is also known by other names such as: regenerative blower, vortex blower, and side-channel blower. All of the names describe the basic principle of operation of the blower.

The blower consists of an impeller mounted directly on a motor shaft and is rotated at a high speed, about 3600 RPM. On the periphery of the impeller is a large number of radial blades. The impeller is positioned between two end-plates with the blades located with a channel on either side (hence, the name "side-channel").

As the impeller spins and the blades pass the inlet port, a low pressure area is created that draws in air, or other gases. The impeller blades impart motion to the air by centrifugal force, throwing it outward and forward, where it follows the contour of the side-channel and is returned to the base, or root, of the impeller. This action is repeated many times, creating a vortex. Each "regeneration" causes the air to gain pressure until it reaches the portion of the housing where the air is stripped from the impeller and discharged from the blower.

The ring compressor is, in effect, a multi-stage compressor with each regeneration of the air becoming another "stage". The pressure increase at each stage in the cycle is very small, but the large number of stages yields inlet vacuum levels of up to 8 in. Hg and discharge pressures of up to 5 PSIG, depending on the size of the blower. Flow levels of up to 570 SCFM can be achieved, and discharge air is free of annoying pulsations.

The basic construction of a ring compressor means that the only moving part is the impeller. Nothing touches except the bearings. The method of compression means that there is no requirement for lubrication in the compression chamber; the discharge air is oil-less. No oil aerosols are present in the discharge air; nor carbon dust generated by sliding vanes. The blowers may be mounted vertically (with impeller housing down) or horizontally.



## CONSTRUCTION

Fuji's complete line of ring compressors is designed to meet the most critical application requirements. Each features an impeller, mounting base and housing manufactured of aluminum alloy for maximum strength, reduced weight and increased corrosion resistance. The compressor and motor are constructed as a unit for mechanical simplicity and maximum structural integrity. The elimination of clutches, gears, belts, and sliding vanes reduces periodic maintenance while increasing reliability.

TEFC (totally enclosed, fan-cooled) motors are standard on all models, except VFC063P and VFC100 models, which are TENV (totally enclosed, non-ventilated). In addition, all models have NEMA class B, or class F (model VFC704), insulation, and are Underwriters Recognized (Yellow Card File E54355), CSA certified (File LR48762), and meets CE. All single phase units have built-in automatic reset thermal protectors, except models VFC400P and VFC504P. All three phase units have pilot duty thermal protectors requiring only the addition of an external contactor for overload protection, however, magnetic motor starters are recommended.

All ring compressor impellers are dynamically balanced to virtually eliminate vibration while increasing overall long-term reliability. Most models have a shaft oil-seal between the impeller and bearing, as well as a double shielded bearing to reduce the possibility of foreign material influx and preclude air contamination.

## FEATURES

Suction and discharge silencers

Die cast impeller

Dynamically balanced impeller

Double shielded shaft bearing

Dust-proof shaft seal

Motor shaft-mounted impeller

50/60 Hz motors, wide voltage range

Improved cooling fan design

Built-in thermal protector

Compact design

Removable threaded flanges

## BENEFITS

Reduces noise levels to below OSHA standards. Makes it more comfortable for employees working near the blowers.

Promotes smoother air flow and higher volumetric efficiency.

Smoother operation. Allows vibration-free installation in OEM equipment.

Better grease retention. Increased reliability.

Protects bearings from contaminants for longer life.

Eliminates the need for couplings, belts, or gears. Nothing to break or wear out.

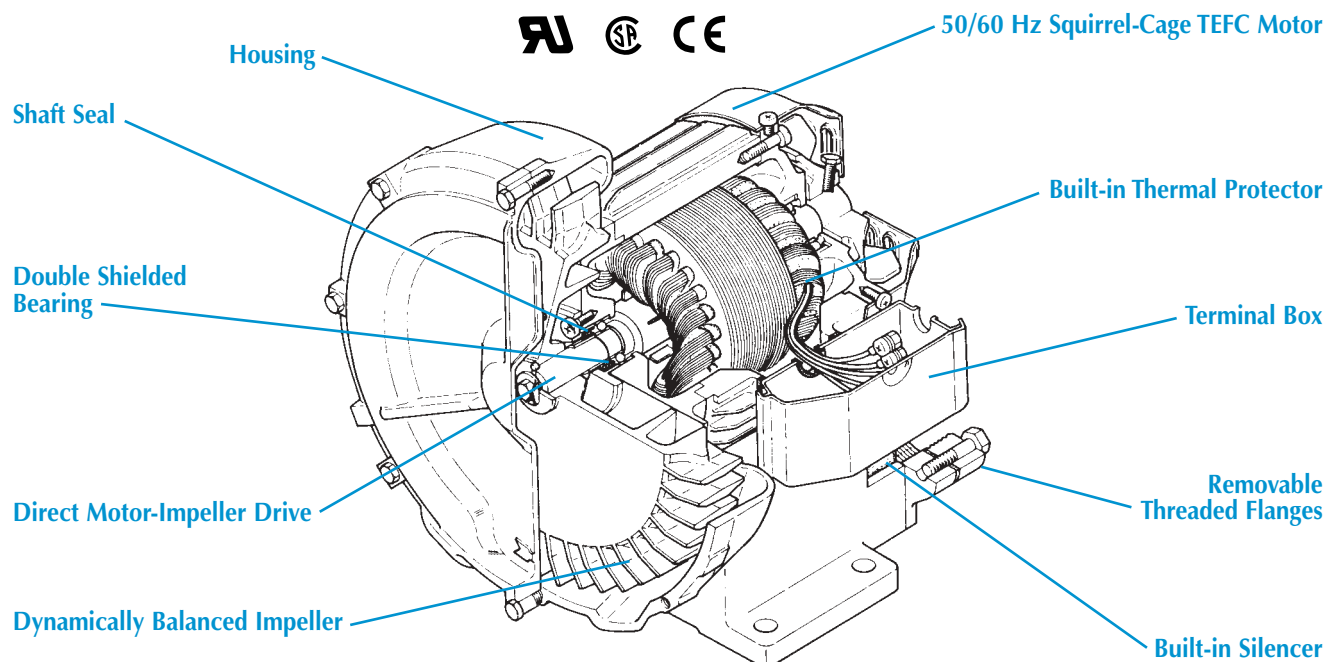
Minimizes OEM inventory requirements.

Cools the motor and blower. Quieter running and more efficient.

Protects the motor from overheating for greater reliability.

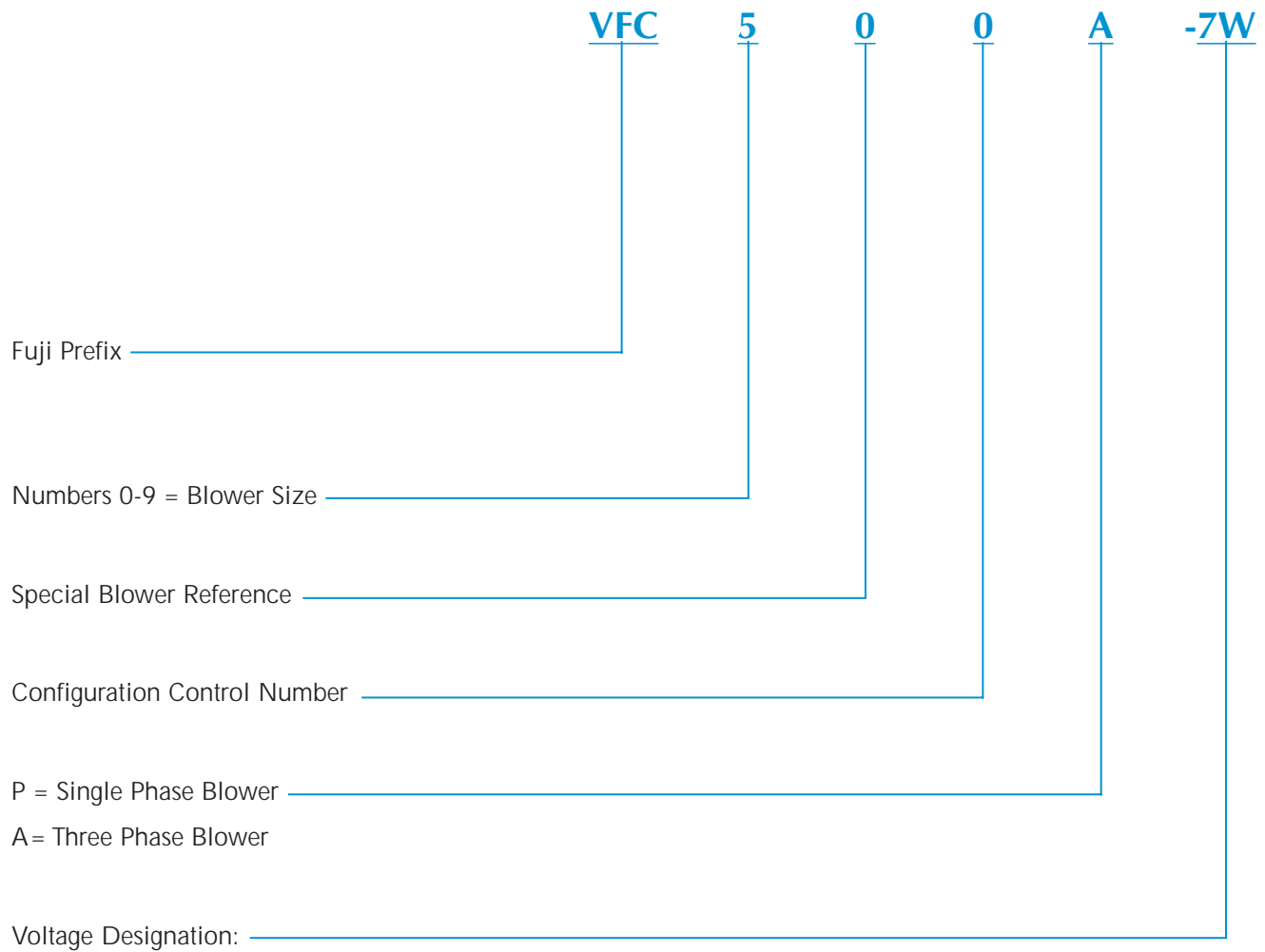
Space saving design makes it easier for OEM's to incorporate the blower into their equipment.

Easy replacement in OEM equipment.



# SELECTION GUIDE

## FUJI RING COMPRESSOR MODEL NUMBER DESIGNATION



1T = 115V; 50/60 Hz; 1 Ph.

2T = 230V; 50/60 Hz; 1 Ph.

200-230V; 50/60 Hz; 3 Ph.

5T = 115V/230V; 50/60 Hz; 1 Ph.

4W = 460V; 50/60 Hz; 3 Ph.

7W = 200-230/460V; 50/60 Hz; 3 Ph.

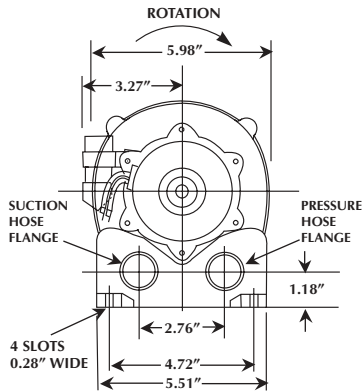
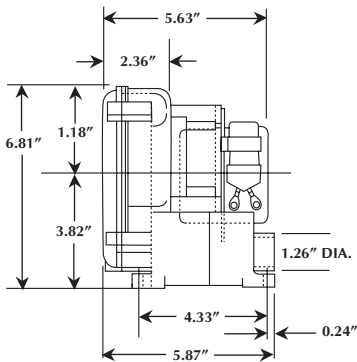
5W = 575V; 60 Hz; 3 Ph.

(For specific electrical data see pages 50, 51)

# TABLE OF CONTENTS

<b>Company Profile</b> .....	<b>1</b>
<b>Principle of Operation</b> .....	<b>2</b>
<b>Construction</b> .....	<b>2</b>
<b>Features and Benefits</b> .....	<b>3</b>
<b>Selection Guide</b> .....	<b>4</b>
<b>Technical and Performance Data</b>	
VFC063 .....	<b>6</b>
VFC084 .....	<b>8</b>
VFC100 .....	<b>10</b>
VFC200 .....	<b>12</b>
VFC300 .....	<b>14</b>
VFC400 .....	<b>16</b>
VFC504P/500A .....	<b>18</b>
VFC600 .....	<b>20</b>
VFC704 .....	<b>22</b>
VFC804 .....	<b>24</b>
VFC904 .....	<b>26</b>
<b>Accessories</b>	
Inlet Filter .....	<b>28</b>
Inlet Filter Covers .....	<b>28</b>
Inlet Filter / Silencers .....	<b>28</b>
Inlet Filter / Silencer Replacement Elements .....	<b>28</b>
Inline Vacuum Filters .....	<b>29</b>
Inline Vacuum Filter Replacement Elements .....	<b>29</b>
Inline Filter Traps .....	<b>30</b>
Exhaust Silencer (Mufflers) .....	<b>30</b>
Inlet Filter / Receivers .....	<b>31</b>
Fiberglass Screen Collection Bags .....	<b>31</b>
High Volume Filter / Receivers .....	<b>32</b>
Canton Flannel Filter Bags .....	<b>32</b>
Disposable / Reusable Filter Bags .....	<b>32</b>
Vacuum and Pressure Relief Valves .....	<b>33</b>
Vacuum Boosters .....	<b>34</b>
Aspirators .....	<b>34</b>
Blower / Aspirator Performance Curves .....	<b>35</b>
Air Knives .....	<b>38</b>
<b>Applications</b>	
General Classifications .....	<b>36</b>
Typical Applications .....	<b>37</b>
Spas and Hot Tubs .....	<b>40</b>
Tank Agitation .....	<b>42</b>
Tank Ventilation .....	<b>43</b>
<b>Engineering</b>	
Air Flow Through an Orifice .....	<b>44</b>
Flow Coefficients for Orifices .....	<b>45</b>
Pressure Drop Through Tubing .....	<b>46</b>
Altitude-vs-Barometric Pressure .....	<b>47</b>
Temperature Conversion Chart .....	<b>48</b>
Conversion Charts .....	<b>49</b>
<b>Electrical</b> .....	<b>50</b>
<b>Design Considerations</b> .....	<b>52</b>
<b>Operating Limits</b> .....	<b>53</b>

# VFC063



The VFC063 is a single-stage ring compressor with a maximum pressure of 10 in. H<sub>2</sub>O, a maximum vacuum of 9.7 in. H<sub>2</sub>O and a maximum capacity of 17.7 SCFM. It comes complete with a direct drive, 1/20 horsepower, TENV motor capable of operating on 115 volts, on 50 or 60 Hz. A built-in automatic reset thermal protector is standard. This version has NEMA class B insulation, are UL recognized, CSA certified, and CE.

## SPECIFICATIONS

		Voltage		Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight
Model No.		Low Voltage/High Voltage				in. H <sub>2</sub> O	in. H <sub>2</sub> O	SCFM	SCFM	°F(°C)	lbs.(kg)
1 Phase	VFC063P-1T	60	115	0.56	1.2	10	9.7	17.7	0	54(30)	6.0(2.7)
		50	110	0.4	0.9	7.5	7.3	14.7	0	36(20)	

## ACCESSORIES

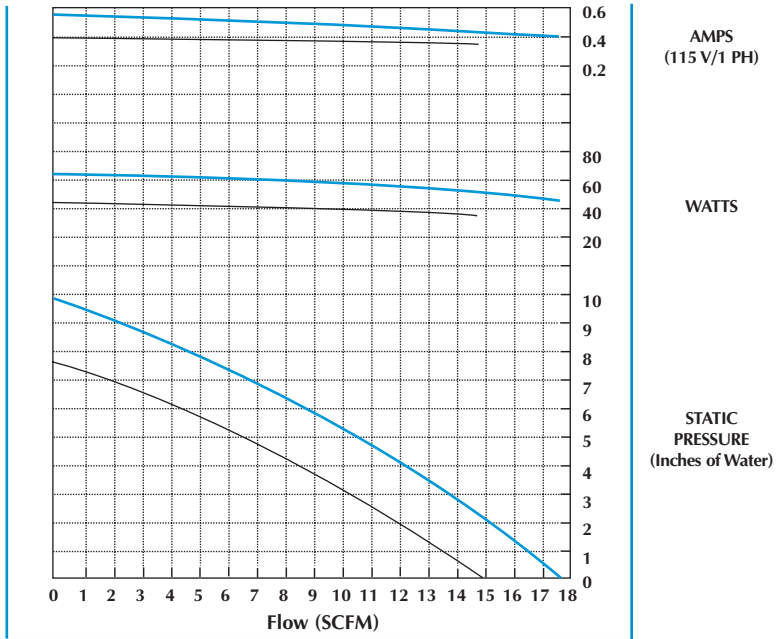
Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filtered Cover	Exhaust Silencer/Muffler
Model No.	Not Req'd	Not Req'd	F-123	C-123	VFY-021A
See Page No.	—	—	28	28	30



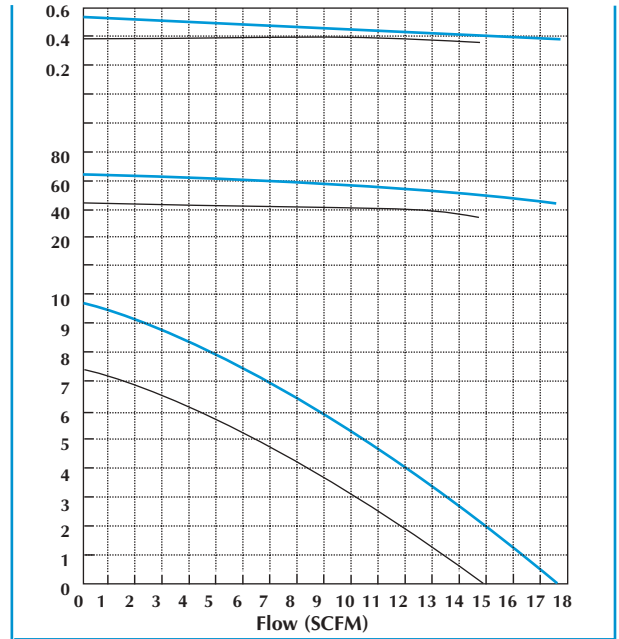
**NOTE:** Maximum allowable time at deadhead is unlimited

# PERFORMANCE DATA

## PRESSURE

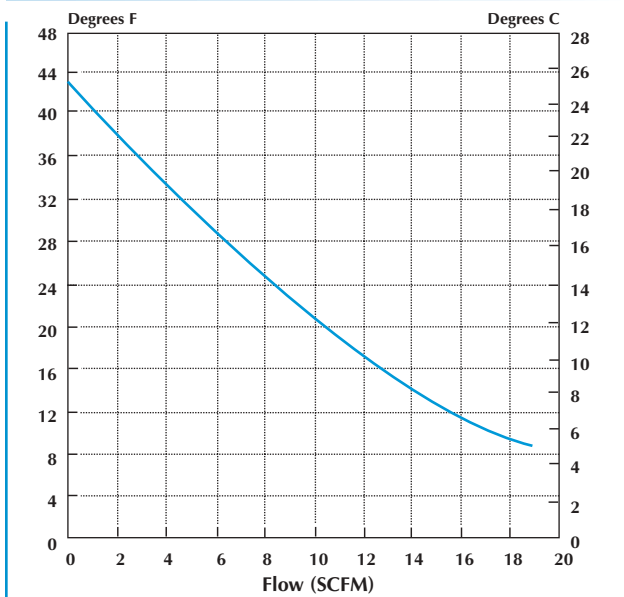


## VACUUM

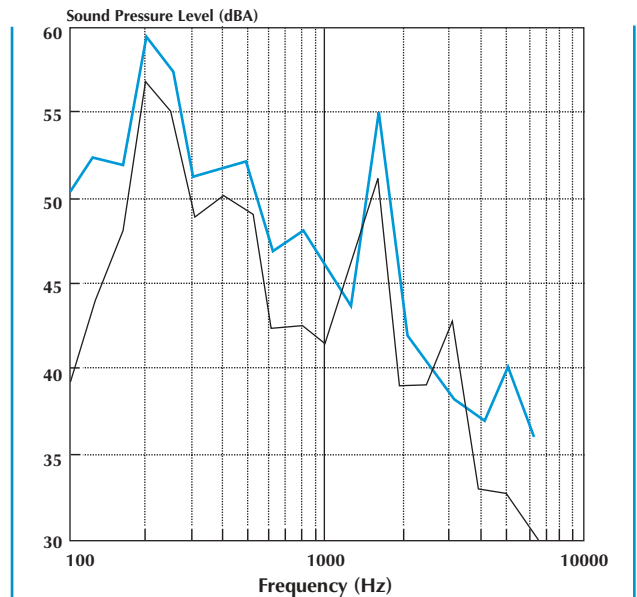


— 60 Hz  
— 50 Hz

## TEMPERATURE RISE

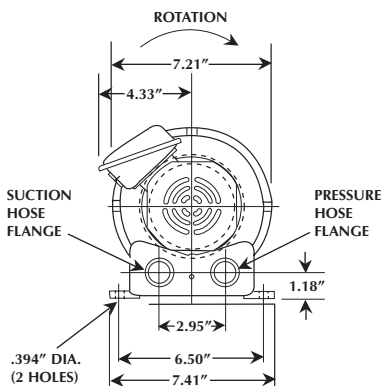
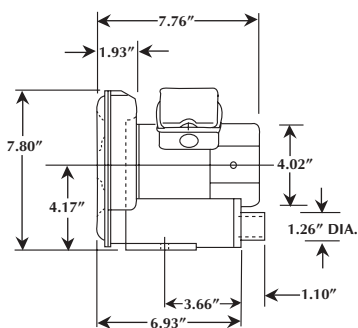


## SOUND LEVEL



\*Measured at distance of 1.0 meters

# VFC084



The VFC084 is a single-stage ring compressor with a maximum pressure of 19.5 in. H<sub>2</sub>O, and a maximum vacuum of 18.7 in. H<sub>2</sub>O, and a maximum capacity of 19.5 SCFM. It comes

complete with a direct-drive, 1/10 horsepower, TEFC motor capable of operating on a wide range of voltages and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment

on all 3-phase models, and built-in automatic reset thermal protectors on 1-phase units. All versions have NEMA class B insulation, are UL recognized, CSA certified and CE.

## SPECIFICATIONS

		Voltage		Amps (Max. Rated)		Amps (Locked Rotor)		Max. Pressure		Max. Vacuum		Max. Airflow		Min. Airflow		Max. Temp Rise (ΔT)		Weight	
Model No.		Hz	Low Voltage/High Voltage			in. H <sub>2</sub> O		in. H <sub>2</sub> O		SCFM		SCFM		°F(°C)		lbs.(kg)			
1 Phase	VFC084P-5T	60	115/230	1.2/0.6	3.4/1.7	19.5	18.7	19.5	0	54 (30)	13.3 (6.0)								
		50	110/220	1.1/0.5	3.2/1.6	15	14.4	16.5	0	36 (20)									
3 Phase	VFC084A-2T	60	200-240	0.42-0.40	1.8-2.1	19.5	18.7	19.5	0	54 (30)									
		50	190-230	0.37-0.32	1.8-2.1	15	14.4	16.5	0	36 (20)									
	VFC084A-4W	60	400-480	0.21-0.20	0.9-1.1	19.5	18.7	19.5	0	54 (30)									
		50	380-460	0.18-0.16	0.9-1.1	15	14.4	16.5	0	36 (20)									

## ACCESSORIES

Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filter Cover	Inlet Filter/Receiver	Exhaust Silencer/Muffler
Model No.	Not Req'd	Not Req'd	F-123	C-123	R15P1.5	VFY-021A
See Page No.	-	-	28	28	31	30

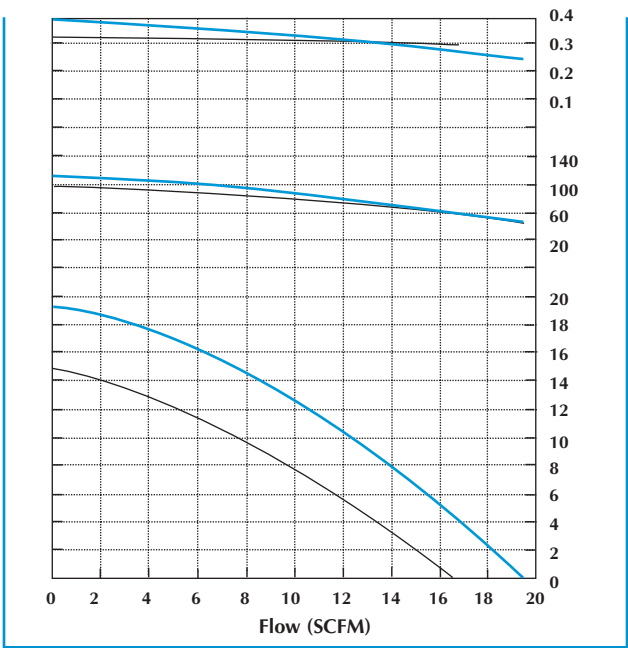


**NOTE:** Maximum allowable time at deadhead is unlimited

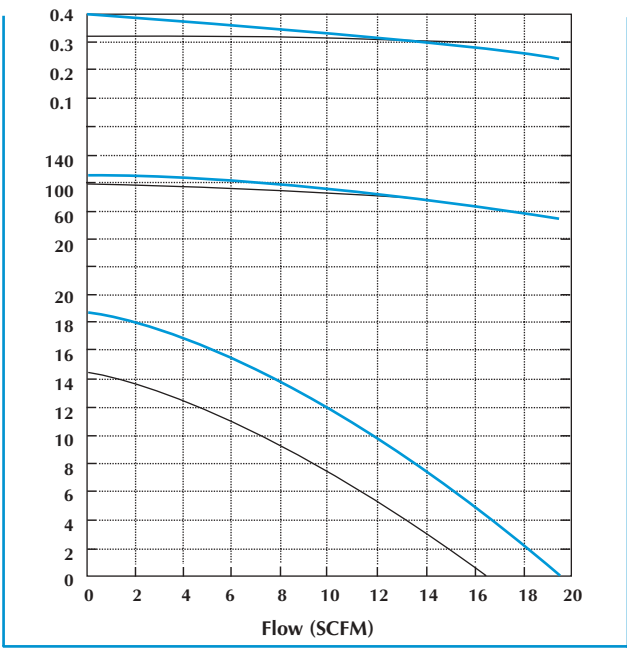


# PERFORMANCE DATA

## PRESSURE

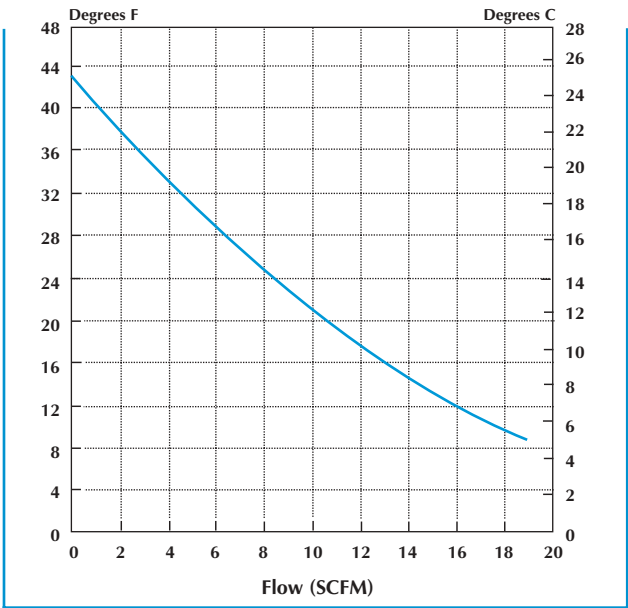


## VACUUM

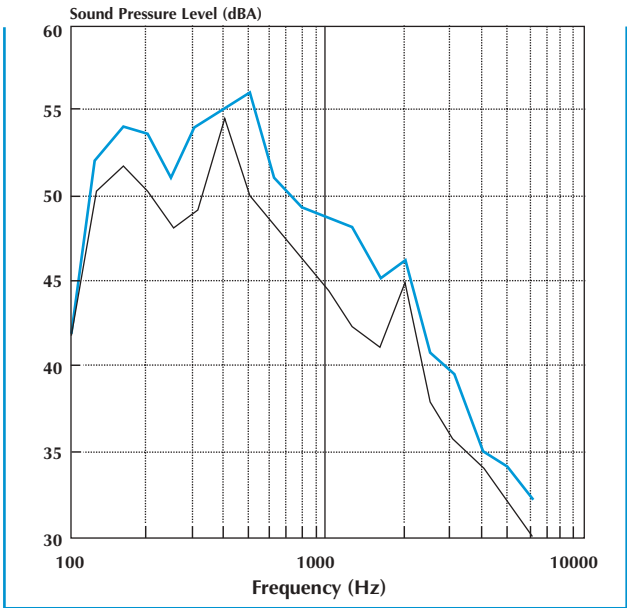


— 60 Hz  
— 50 Hz

## TEMPERATURE RISE

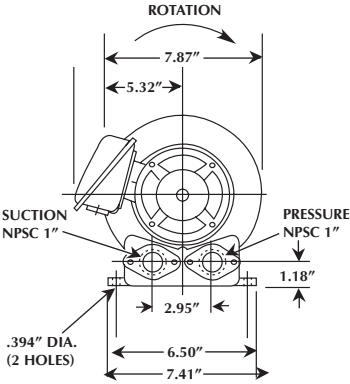
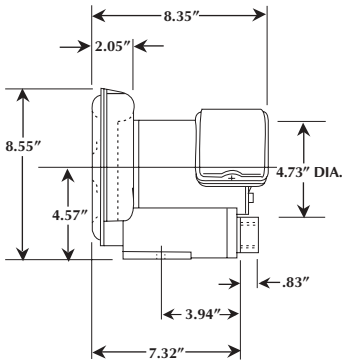


## SOUND LEVEL



\*Measured at distance of 1.0 meters

# VFC 100



The VFC100 is a single-stage ring compressor with a maximum pressure of 27.5 in. H<sub>2</sub>O, a maximum vacuum of 26 in. H<sub>2</sub>O, and a maximum capacity of 27 SCFM. It comes complete with a direct-drive, 1/6 horsepower, TENV motor capable of operating on a wide range of voltages, and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on all 3-phase models, and built-in automatic reset thermal protectors on 1-phase units. All versions have NEMA class B insulation, are UL recognized, CSA certified and CE.

## SPECIFICATIONS

		Voltage		Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight
Model No.		Low Voltage/High Voltage				in. H <sub>2</sub> O	in. H <sub>2</sub> O	SCFM	SCFM	°F(°C)	lbs.(kg)
1 Phase	VFC100P-5T	60	115/230	1.5/0.75	8.4/4.2	27.5	26	27	3.5	72(40)	19(8.6)
		50	110/220	1.3/0.65	8.6/4.3	22	21	23	1.75	65(35)	
3 Phase	VFC100A-7W	60	200-240/400-480	0.53-0.52/0.27-0.26	2.0-2.4/1.0-1.2	26.5	25	27	3.5	72(40)	
		50	190-230/380-460	0.4-0.46/0.2-0.23	2.2-2.6/1.1-1.3	20	19	22	1.75	65(35)	

## ACCESSORIES

-For additional accessories: See pages 28-37.

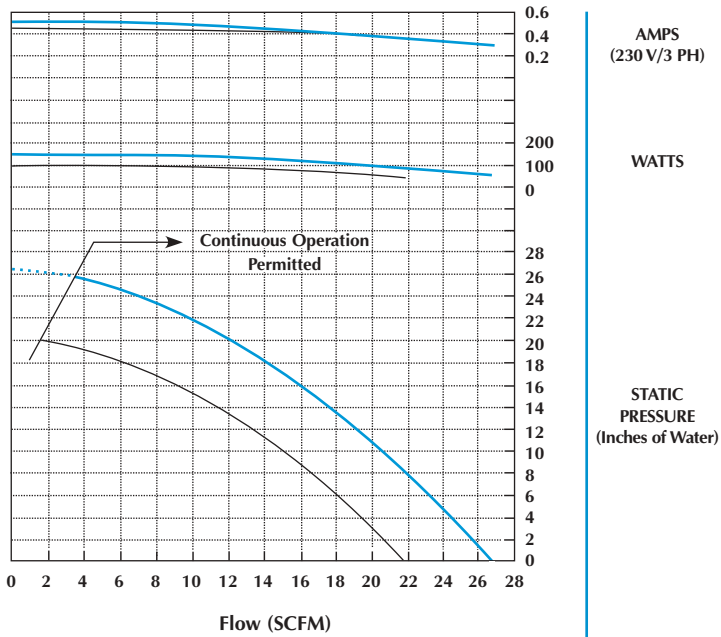
Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filtered Cover	Inlet Filter/Receiver	Silencer/ Muffler
Model No.	Not Req'd	Not Req'd	F-123	C-123	R15P1.5	VFY-021A
See Page No.	—	—	28	28	31	30



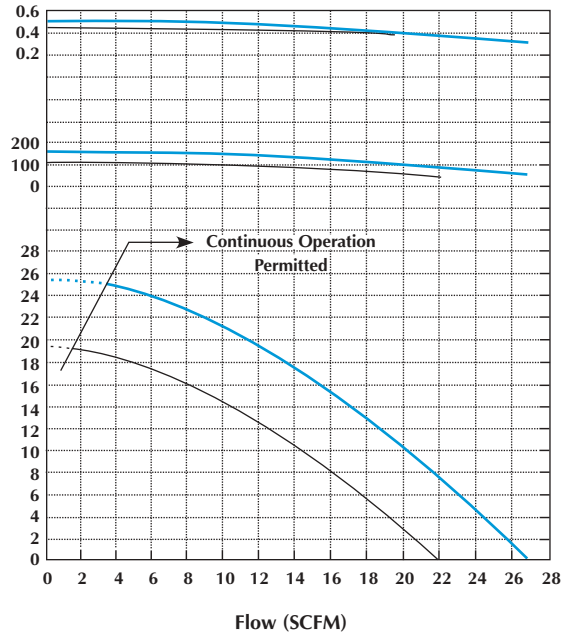
**NOTE:** Maximum allowable time at deadhead is 600 seconds.

# PERFORMANCE DATA

## PRESSURE



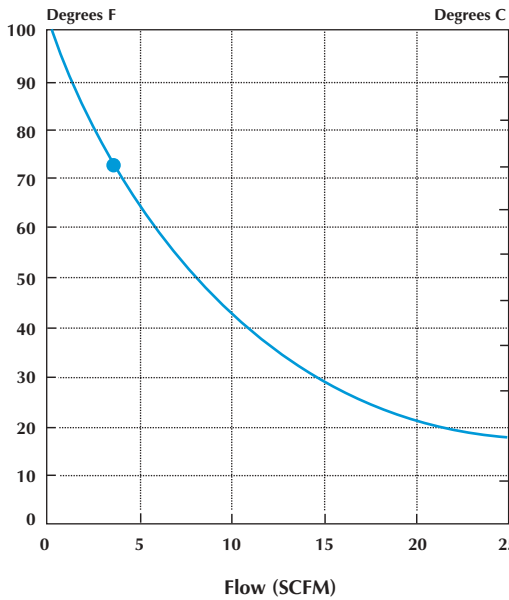
## VACUUM



— 60 Hz

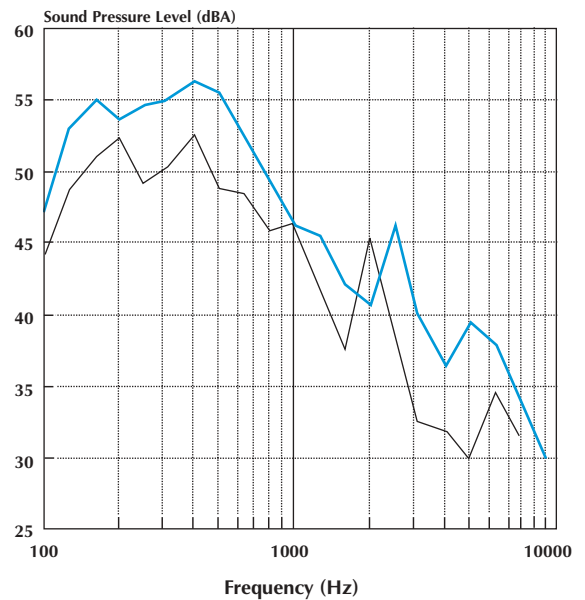
— 50 Hz

## TEMPERATURE RISE



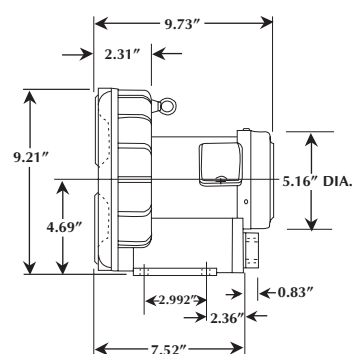
Max. Air Temperature is Value Marked •  
plus 40 Degrees C Ambient Temperature

## SOUND LEVEL

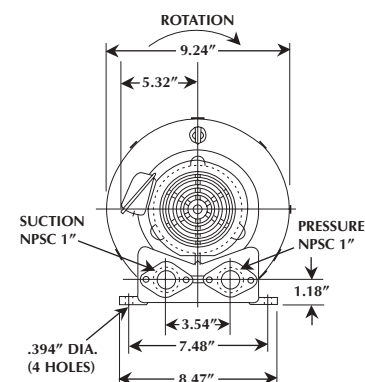


\*Measured at distance of 1.0 meters

# VFC200



3-Phase version shown  
Contact factory for other versions



The VFC200 is a single-stage ring compressor with a maximum pressure of 37 in. H<sub>2</sub>O, a maximum vacuum of 34 in. H<sub>2</sub>O, and a maximum capacity of 42 SCFM. It comes complete with a direct-drive, 1/3 horsepower, TEFC motor capable of operating on a wide range of voltages, and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on all 3-phase models, and built-in automatic reset thermal protectors on 1-phase units. All versions have NEMA class B insulation, are UL recognized, CSA certified and CE.

## SPECIFICATIONS

		Voltage		Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight
Model No.		Hz	Low Voltage/High Voltage			in. H <sub>2</sub> O	in. H <sub>2</sub> O	SCFM	SCFM	°F(°C)	lbs.(kg)
1 Phase	VFC200P-5T	60	115/230	3.6/1.8	11/5.5	34	33	42	3.5	72(40)	22(10)
		50	110/220	3.0/1.5	10/5	26	25	35	3.5	65(35)	
3 Phase	VFC200A-7W	60	200-240/400-480	1.2-1.2/0.6-0.6	5.2-6.0/2.6-3.0	37	34	42	3.5	72(40)	
		50	190-230/380-460	1.0-1.1/0.5-0.55	5.8-6.6/2.9-3.3	26	25	35	3.5	65(35)	

## ACCESSORIES

-For additional accessories: See pages 28-37.

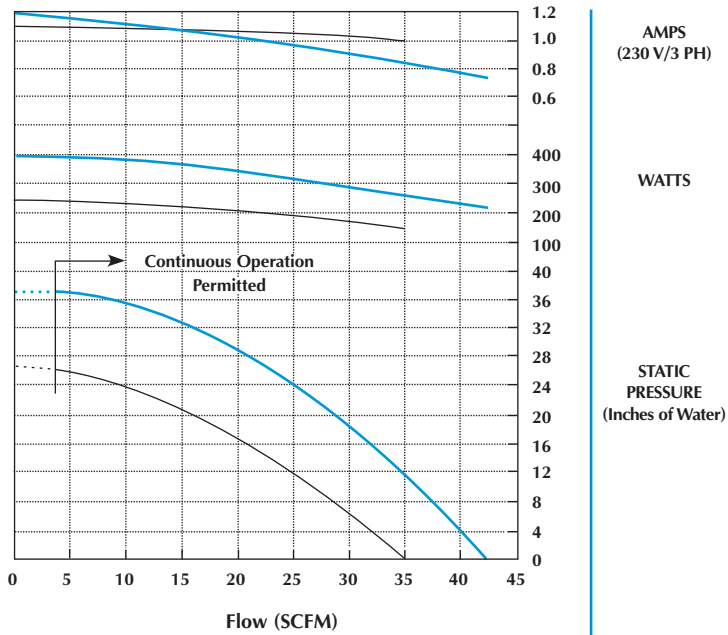
Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filtered Cover	Inlet Filter/Receiver	Exhaust Muffler
Model No.	Not Req'd	Not Req'd	F-123	C-123	R15P	VFY-021A
See Page No.	—	—	28	28	31	30



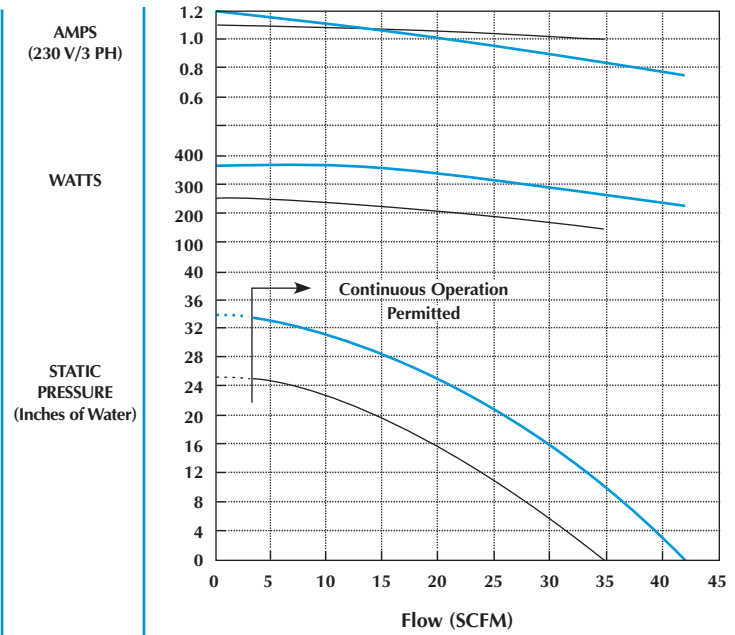
**NOTE:** Maximum allowable time at deadhead is 240 seconds.

# PERFORMANCE DATA

## PRESSURE

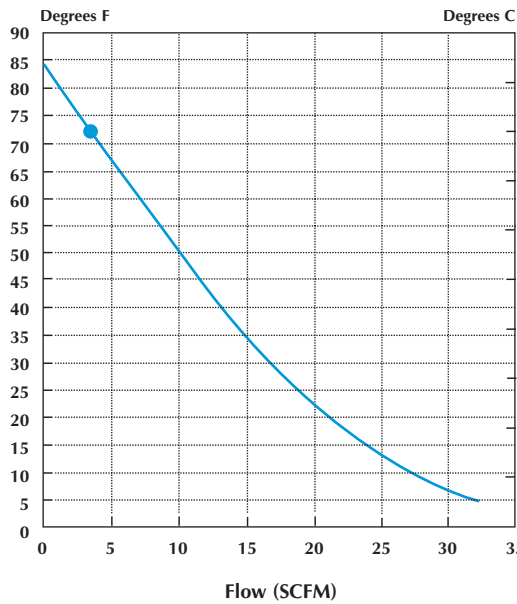


## VACUUM



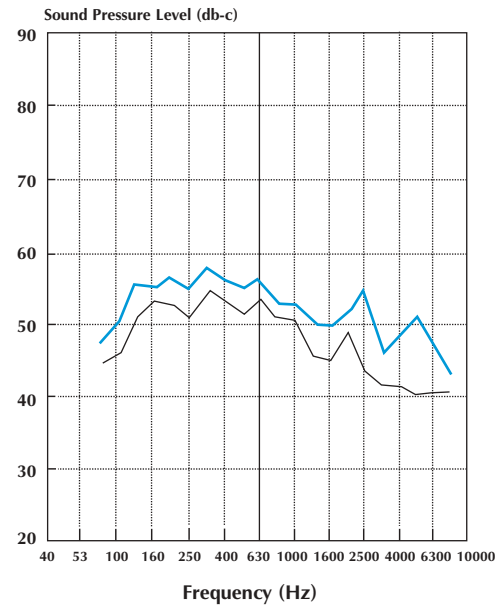
— 60 Hz  
— 50 Hz

## TEMPERATURE RISE



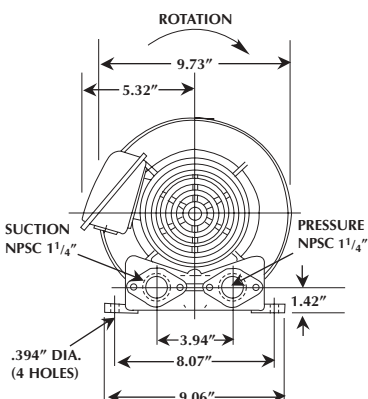
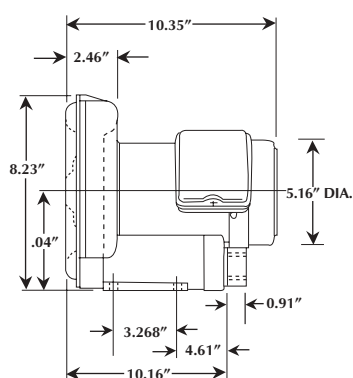
Max. Air Temperature is Value Marked •  
plus 40 Degrees C Ambient Temperature

## SOUND LEVEL



\*Measured at distance of 1.0 meters

# VFC300



The VFC300 is a single-stage ring compressor with a maximum pressure of 50 in. H<sub>2</sub>O, a maximum vacuum of 45 in. H<sub>2</sub>O, and a maximum capacity of 56 SCFM. It comes complete with a direct-drive, 1/2 horsepower. TEFC motor capable of operating on a wide range of voltages, and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on all 3-phase models, and built-in automatic reset thermal protectors on 1-phase units. All versions have NEMA class B insulation, are UL recognized, CSA certified, and CE. 575 Volt units are CSA certified only.

## SPECIFICATIONS

		Voltage		Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight
Model No.		Hz	Low Voltage/High Voltage			in. H <sub>2</sub> O	in. H <sub>2</sub> O	SCFM	SCFM	°F(°C)	lbs.(kg)
1 Phase	VFC300P-5T	60	115/230	5.0/2.5	17/8.5	49	45	56	17	54(30)	27(12.3)
		50	110/220	3.8/1.9	15/7.5	38	34	49	10	47(27)	
3 Phase	VFC300A-7W	60	200-240/400-480	1.5-1.7/0.75-0.85	7.2-8/3.6-4	50	45	55	17	54(30)	25.5(11.5)
		50	190-230/380-460	1.4-1.7/0.7-0.85	8-8.8/4-4.4	40	36	47	10	47(27)	
	VFC300A-5W	60	575	0.75	3.8	50	45	55	17	54(30)	25.5(11.5)

## ACCESSORIES

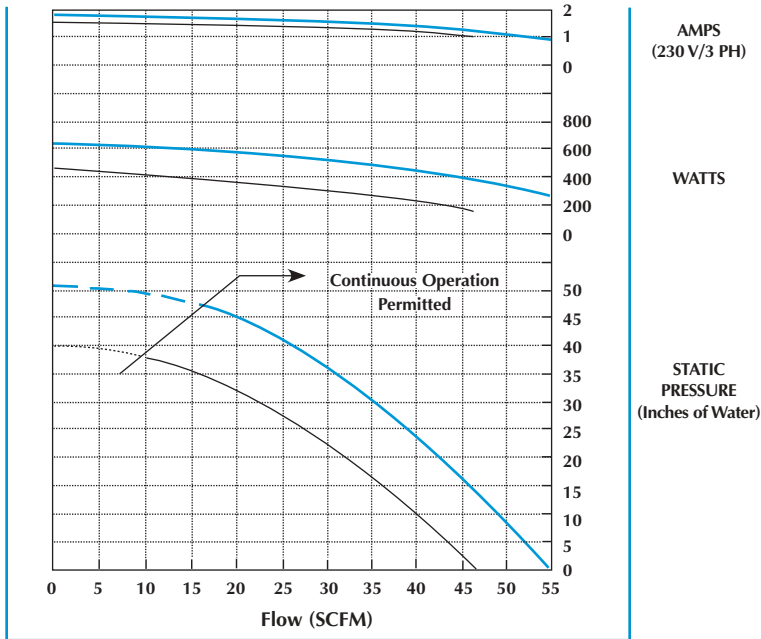
-For additional accessories: See pages 28-37.

Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filter Cover	Inlet Filter/Receiver	Exhaust Silencer/Muffler	UL SP CE
Model No.	VV3	PV3	F-123	C-123	R15P1.5	VFY-023A	
See Page No.	33	33	28	28	31	30	

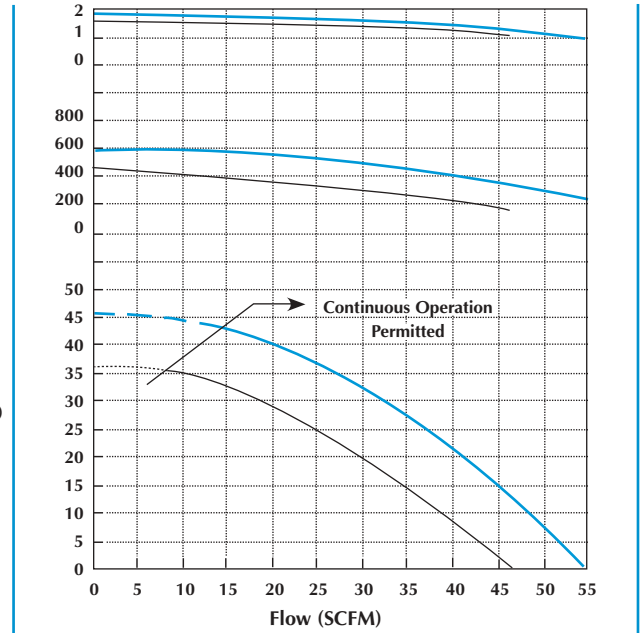
**NOTE:** Maximum allowable time at deadhead is 120 seconds.

# PERFORMANCE DATA

## PRESSURE

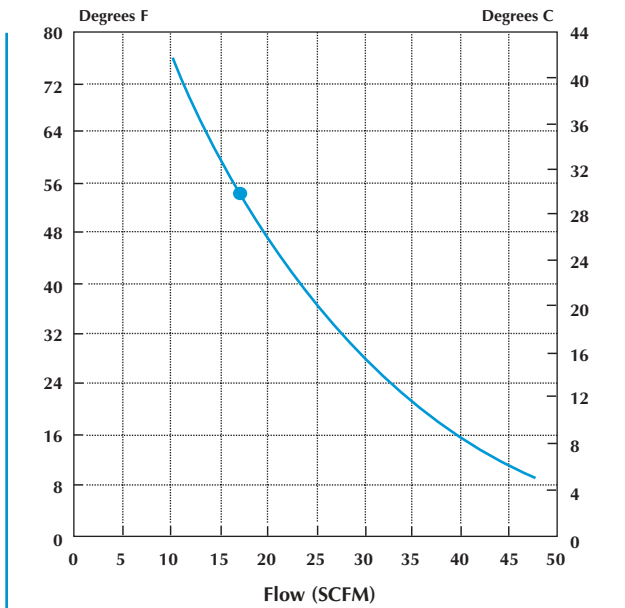


## VACUUM



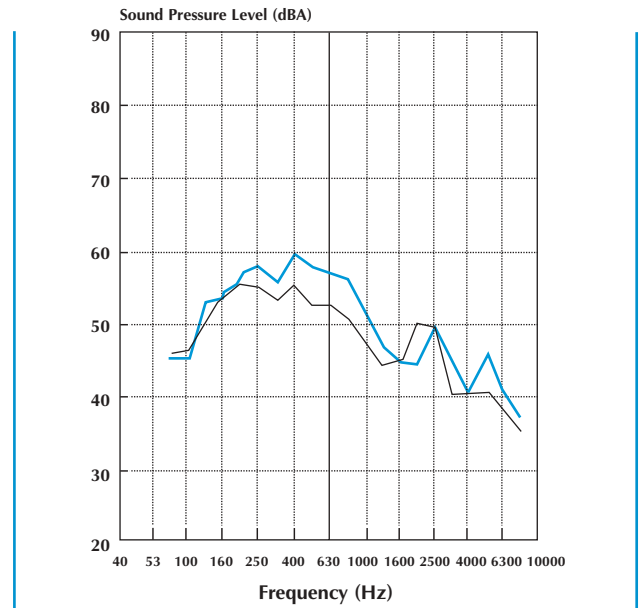
— 60 Hz  
— 50 Hz

## TEMPERATURE RISE



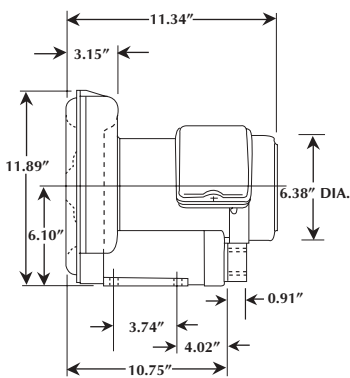
Max. Air Temperature is Value Marked •  
plus 40 Degrees C Ambient Temperature

## SOUND LEVEL

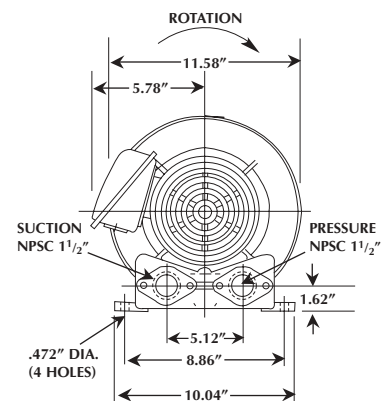


\*Measured at distance of 1.0 meter

# VFC400



3-Phase version shown  
Contact factory for other versions



The VFC400 is a single-stage ring compressor with a maximum pressure of 54.5 in. H<sub>2</sub>O, a maximum vacuum of 50 in. H<sub>2</sub>O, and a maximum capacity of 98 SCFM. It comes complete

with a direct-drive, 1 horsepower, TEFC motor capable of operating on a wide range of voltages, and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on

all 3-phase and 1-phase models. All versions have NEMA class B insulation, are UL recognized, CSA certified, and CE. 575V units are CSA certified only.

## SPECIFICATIONS

SPECIFICATIONS

			Voltage	Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight
Model No.		Hz	Low Voltage/High Voltage			in. H <sub>2</sub> O	in. H <sub>2</sub> O	SCFM	SCFM	°F(°C)	lbs.(kg)
1 Phase	VFC400P-5T	60	115/230	8.6/4.3	24/12	54.5	50	98	3.5	119(65)	51(23)
		50	110/220	6.0/3.0	22/11	40	37	84	3.5	101(55)	
3 Phase	VFC400A-7W	60	200-240/400-480	3.3-2.8/1.7-1.4	15-16.5/7.4-8.2	54.5	50	98	3.5	119(65)	47.5(21.5)
		50	190-230/380-460	2.2-2.4/1.1-1.2	16.5-18.5/8.3-9.2	40	37	84	3.5	101(55)	
	VFC400A-5W	60	575	1.3	7.2	54.5	50	98	3.5	119(65)	47.5(21.5)

## ACCESSORIES

-For additional accessories: See pages 28-37.

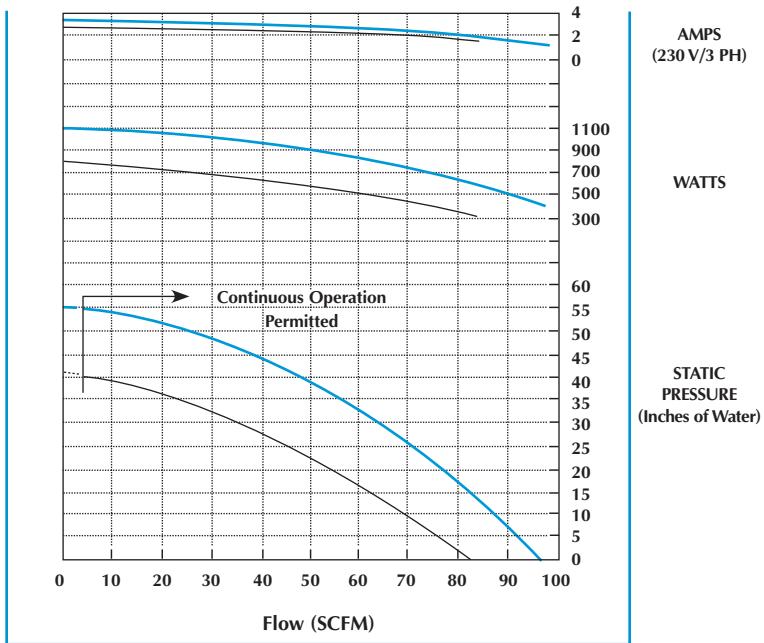
Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filter Cover	Inlet Filter/Receiver	Exhaust Silencer/Muffler	
Model No.	VV4	PV4	F-45	C-45	R30P1.5	VFY-024A	
See Page No.	33	33	28	28	31	30	

**NOTE:** Maximum allowable time at deadhead is 120 seconds.

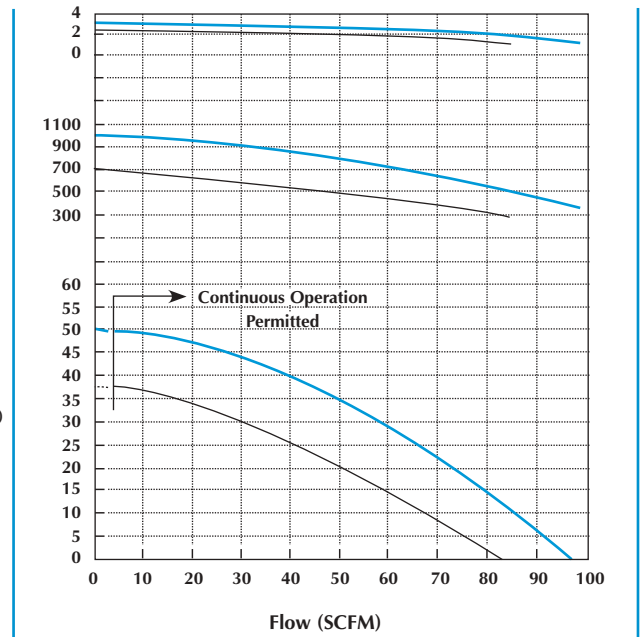


# PERFORMANCE DATA

## PRESSURE

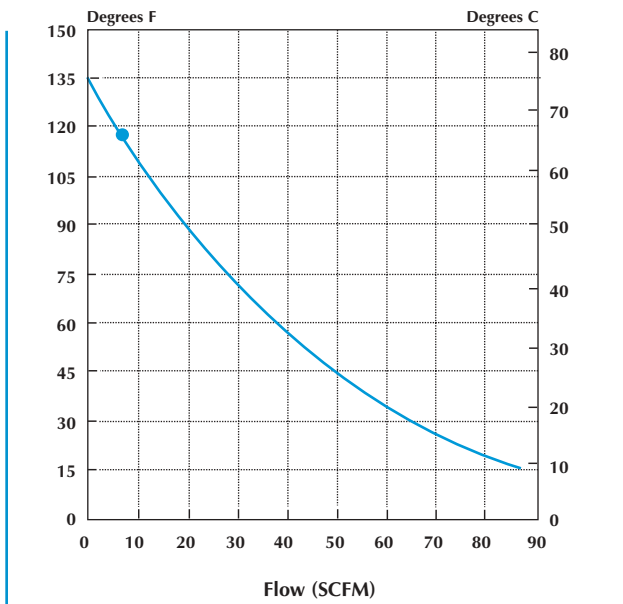


## VACUUM



— 60 Hz  
— 50 Hz

## TEMPERATURE RISE



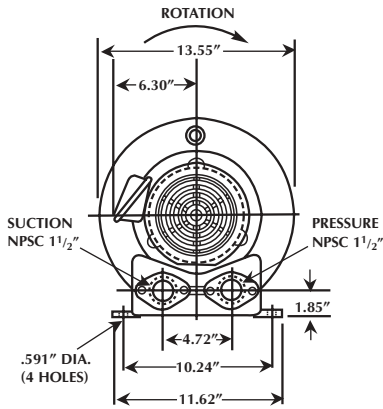
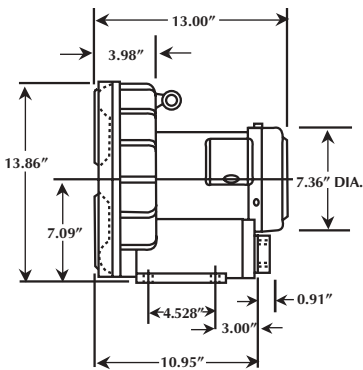
Max. Air Temperature is Value Marked •  
plus 40 Degrees C Ambient Temperature

## SOUND LEVEL



\*Measured at distance of 1.0 meter

# VFC504P/500A



The VFC504P/500A is a single-stage ring compressor with a maximum pressure of 80 in. H<sub>2</sub>O, a maximum vacuum of 70 in. H<sub>2</sub>O, and a maximum capacity of 154 SCFM. It comes complete with a direct-drive, 2.5 horsepower, TEFC motor capable of operating on a wide range of voltages, and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on all 3-phase and 1-phase models. All versions have NEMA class B insulation, are UL recognized, CSA certified, and CE. 575 Volt units are CSA certified only.

## SPECIFICATIONS

		SPECIFICATIONS									
		Voltage	Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight	
Model No.		Hz	Low Voltage/High Voltage			in. H <sub>2</sub> O	in. H <sub>2</sub> O	SCFM	SCFM	°F(°C)	lbs.(kg)
1 Phase	VFC504P-2T	60	200/230	12-11	70-80	80	70	154	60	72(40)	97.5(44)
		50	200/230	8.5-8	70-75	60	53	130	45	65(35)	
3 Phase	VFC500A-7W	60	200-240/400-480	6.9-6.2/3.4-3.1	44-52/22-26	80	70	154	45	101(55)	70.5(32)
		50	190-230/380-460	5.2-5.4/2.6-2.7	48-56/24-28	60	53	130	25	72(40)	
	VFC500A-5W	60	575	2.3	21	80	70	154	45	101(55)	70.5(32)

## ACCESSORIES

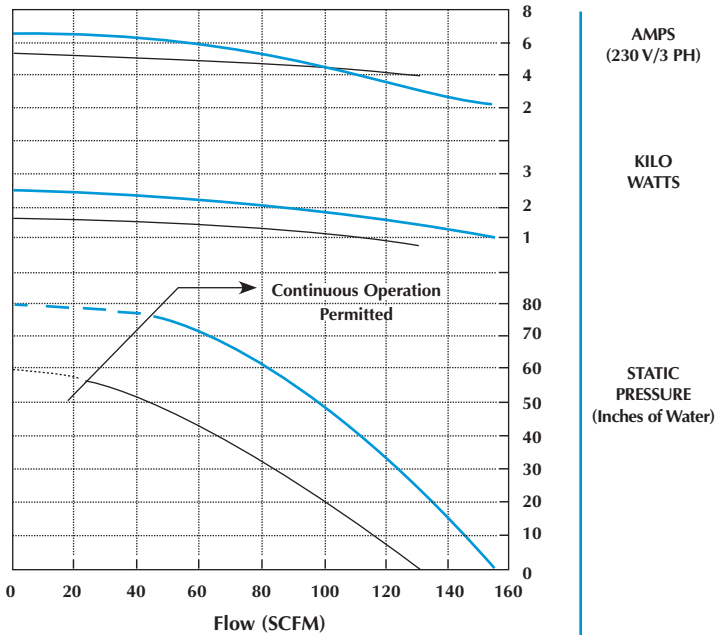
-For additional accessories: See pages 28-37.

Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filter Cover	Inlet Filter/Receiver	Exhaust Silencer/Muffler	
Model No.	VV5	PV5	F-45	C-45	R30P1.5	VFY-024A	
See Page No.	33	33	28	28	31	30	

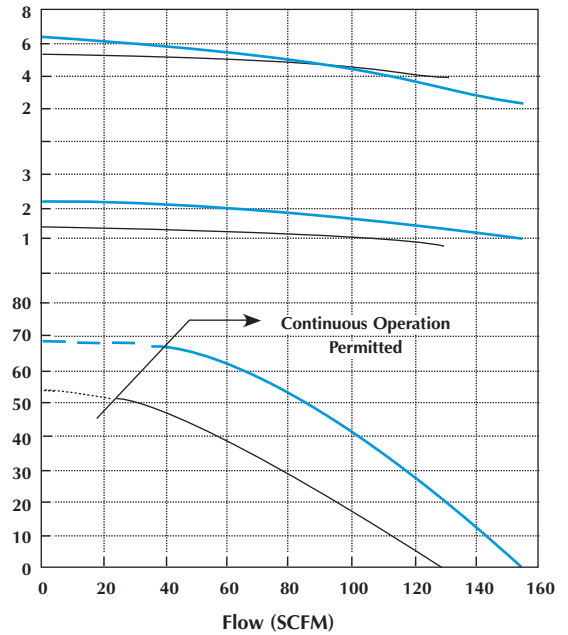
**NOTE:** Maximum allowable time at deadhead is 60 seconds.

# PERFORMANCE DATA

## PRESSURE

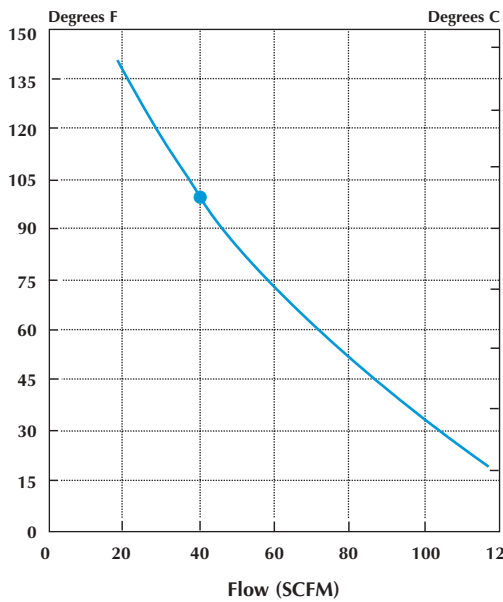


## VACUUM



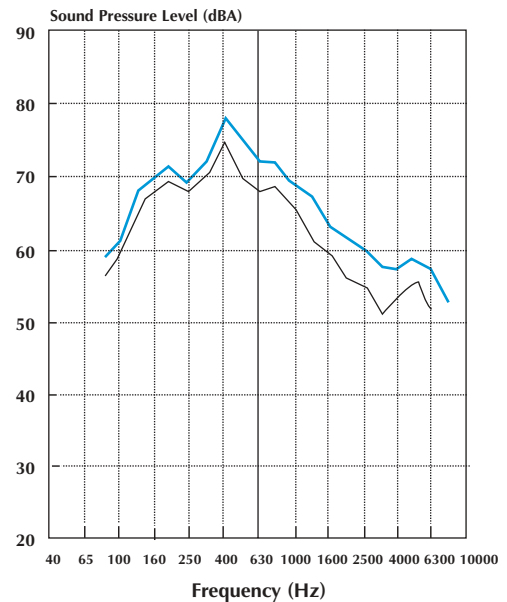
— 60 Hz  
— 50 Hz

## TEMPERATURE RISE



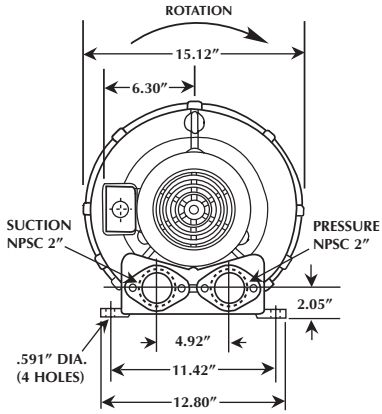
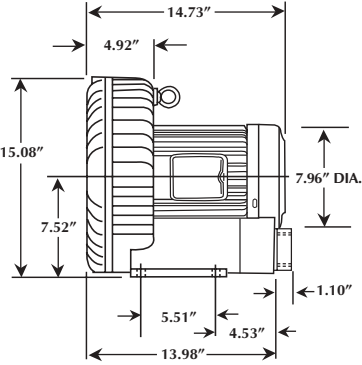
Max. Air Temperature is Value Marked •  
plus 40 Degrees C Ambient Temperature

## SOUND LEVEL



\*Measured at distance of 1.0 meter

# VFC600



The VFC600 is a single-stage ring compressor with a maximum pressure of 118 in. H<sub>2</sub>O, a maximum vacuum of 98 in. H<sub>2</sub>O, and a maximum capacity of 206 SCFM. It comes complete with a direct-drive, 4.5 horsepower TEFC motor capable of operating on a wide range of voltages, and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on all 3-phase models. All versions have NEMA class B insulation, are UL recognized, CSA certified, and CE. 575 Volt units are CSA certified only.

## SPECIFICATIONS

SPECIFICATIONS

		Voltage	Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight	
Model No.		Hz	Low Voltage/High Voltage		in. H <sub>2</sub> O	in. H <sub>2</sub> O	SCFM	SCFM	°F(°C)	lbs.(kg)	
3 Phase	VFC600A-7W	60	200-240/400-480	12-11/6.0-5.5	78-90/39-45	118	98	206	56	126(70)	114(52)
		50	190-230/380-460	9.2-10.5/4.6-5.2	88-102/44-51	86	72	175	28	108(65)	
	VFC600A-5W	60	575	4.4	36	118	98	206	56	126(70)	114(52)

## ACCESSORIES

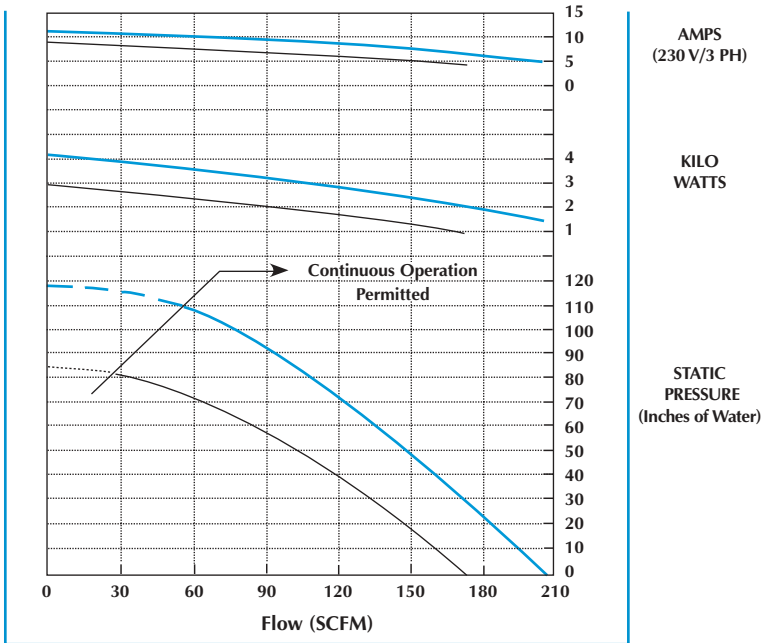
-For additional accessories: See pages 28-37.

Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filter Cover	Inlet Filter/Receiver	Exhaust Silencer/Muffler	
Model No.	VV6	PV6	F-67	C-67	R30P2.0	VFY-026A	
See Page No.	33	33	28	28	31	30	

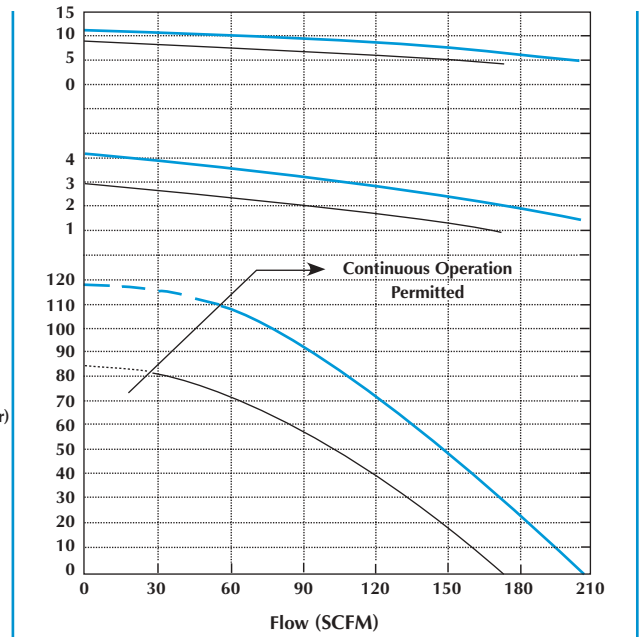
**NOTE:** Maximum allowable time at deadhead is 60 seconds.

# PERFORMANCE DATA

## PRESSURE

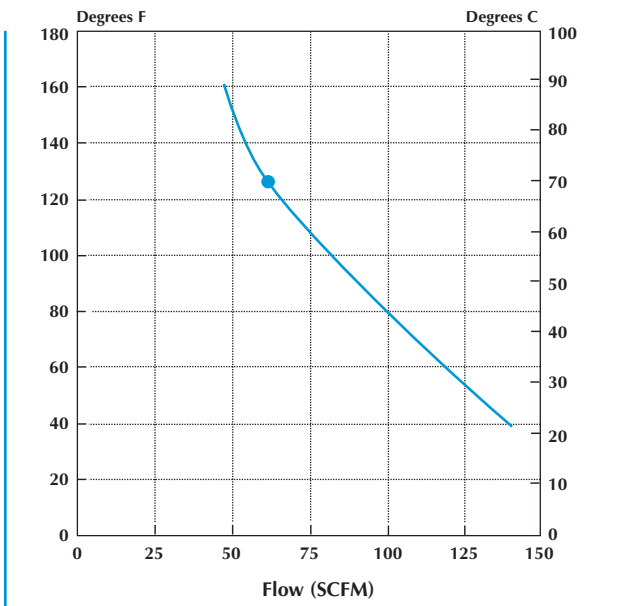


## VACUUM



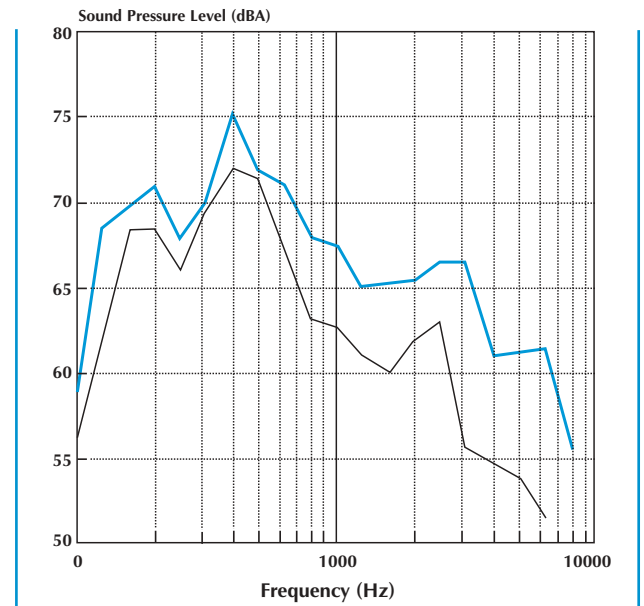
— 60 Hz  
— 50 Hz

## TEMPERATURE RISE



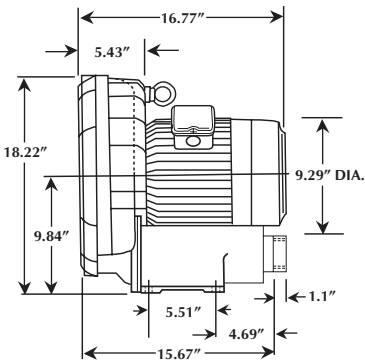
Max. Air Temperature is Value Marked • plus 40 Degrees C Ambient Temperature

## SOUND LEVEL

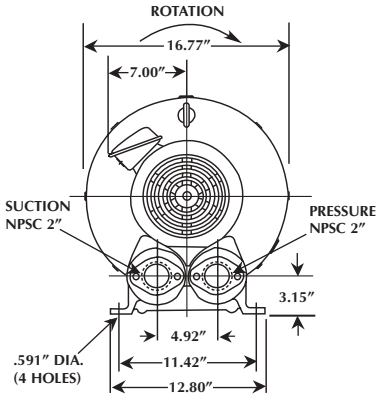


\*Measured at distance of 1.0 meter

# VFC704



3-Phase version shown  
Contact factory for other versions



The VFC704 is a single-stage ring compressor with a maximum pressure of 114 in. H<sub>2</sub>O, a maximum vacuum of 96 in. H<sub>2</sub>O and a maximum capacity of 267 SCFM. It comes complete with a direct-drive, 7 horsepower, TEFC motor capable of operating on a wide range of voltages, and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on all 3-phase models. All versions have NEMA class F insulation, and are UL recognized, CSA certified, and CE. 575 Volt units are CSA certified only.

## SPECIFICATIONS

		Voltage		Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight
Model No.		Hz	Low Voltage/High Voltage			in. H <sub>2</sub> O	in. H <sub>2</sub> O	SCFM	SCFM	°F(°C)	lbs.(kg)
3 Phase	VFC704A-7W	60	200-240/400-480	15.6-16/7.8-8.0	110-115/50-58	114	96	267	88	137(75)	180(82)
		50	190-230/380-460	13-14/6.5-7.0	104-128/52-64	81	71	220	63	108(60)	
	VFC704A-5W	60	575	6.7	35	114	96	267	88	137(75)	180(82)

## ACCESSORIES

-For additional accessories: See pages 28-37.

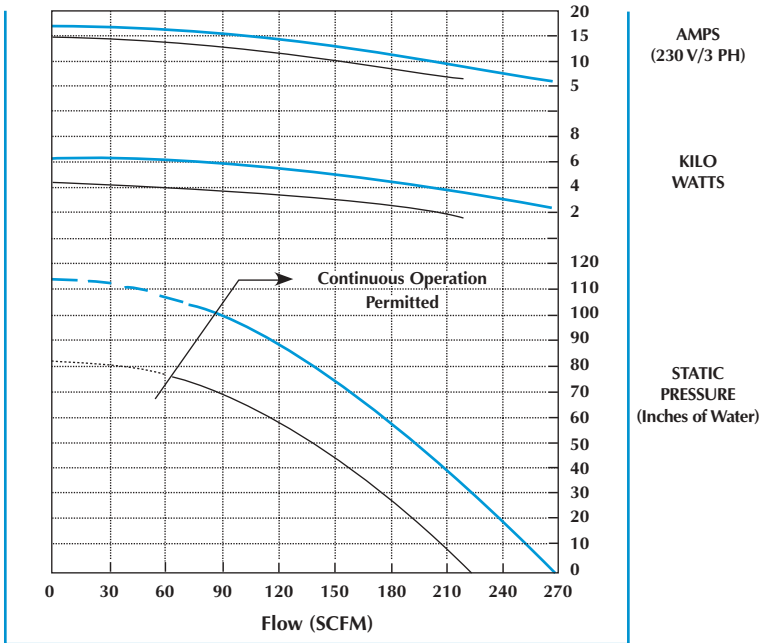
Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filter Cover	Exhaust Silencer/Muffler
Model No.	VV7	PV7	F-67	C-67	VFY-026A
See Page No.	33	33	28	28	30



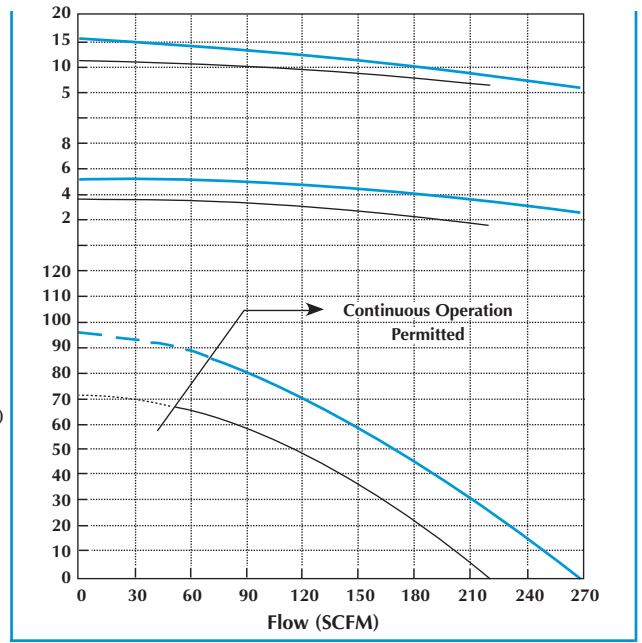
**NOTE:** Maximum allowable time at deadhead is 30 seconds.

# PERFORMANCE DATA

## PRESSURE

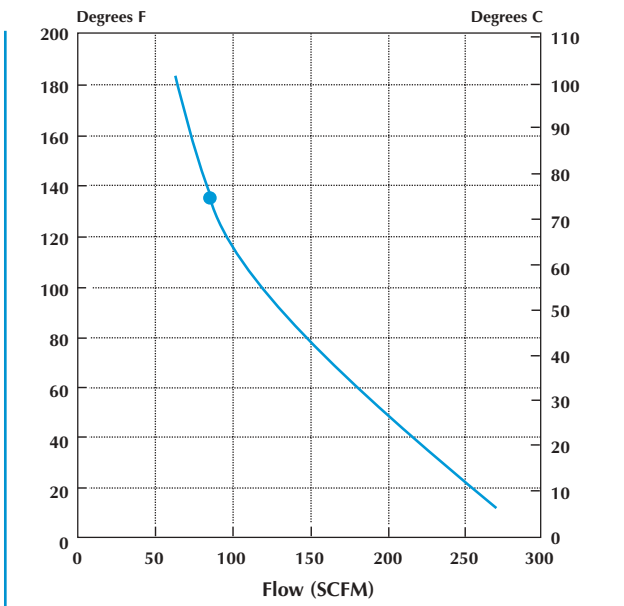


## VACUUM



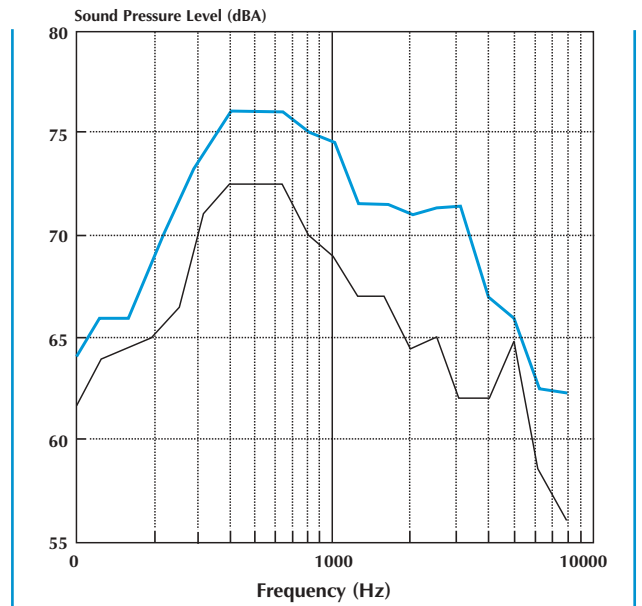
— 60 Hz  
— 50 Hz

## TEMPERATURE RISE



Max. Air Temperature is Value Marked •  
plus 40 Degrees C Ambient Temperature

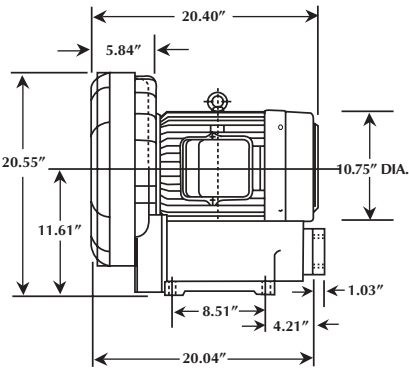
## SOUND LEVEL



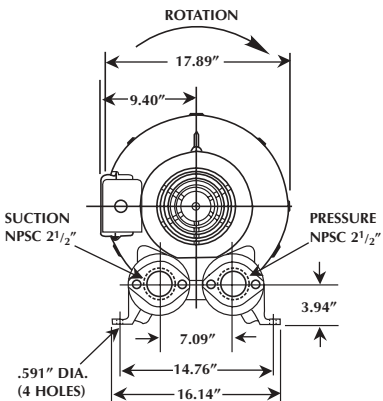
\*Measured at distance of 1.0 meter



# VFC804



3-Phase version shown  
Contact factory for other versions



The VFC804 is a single-stage ring compressor with a maximum pressure of 135 in. H<sub>2</sub>O, a maximum vacuum of 110 in. H<sub>2</sub>O, and a maximum capacity of 388 SCFM. It comes complete with a direct-drive, 10 horsepower, TEFC motor capable of operating on a wide range of voltages, and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on all 3-phase models. All versions have NEMA class B insulation, and are UL recognized, CSA certified, and CE. 575 Volt units are CSA certified only.

## SPECIFICATIONS

SPECIFICATIONS

		Voltage	Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight	
Model No.		Hz	Low Voltage/High Voltage			in. H <sub>2</sub> O	in. H <sub>2</sub> O	SCFM	SCFM	°F(°C)	lbs.(kg)
3 Phase	VFC804A-7W	60	200-240/400-480	26-23/13-11.5	144-160/72-80	135	110	388	135	137(75)	287(130)
		50	190-230/380-460	18-19/9.0-9.5	164-190/82-95	100	83	320	88	137(75)	
	VFC804A-5W	60	575	9.2	66	135	110	388	135	137(75)	287(130)

## ACCESSORIES

-For additional accessories: See pages 28-37.

Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filter Cover	Exhaust Silencer/Muffler
Model No.	VV8	PV8	F-89	C-89	VFY-028A
See Page No.	33	33	28	28	30

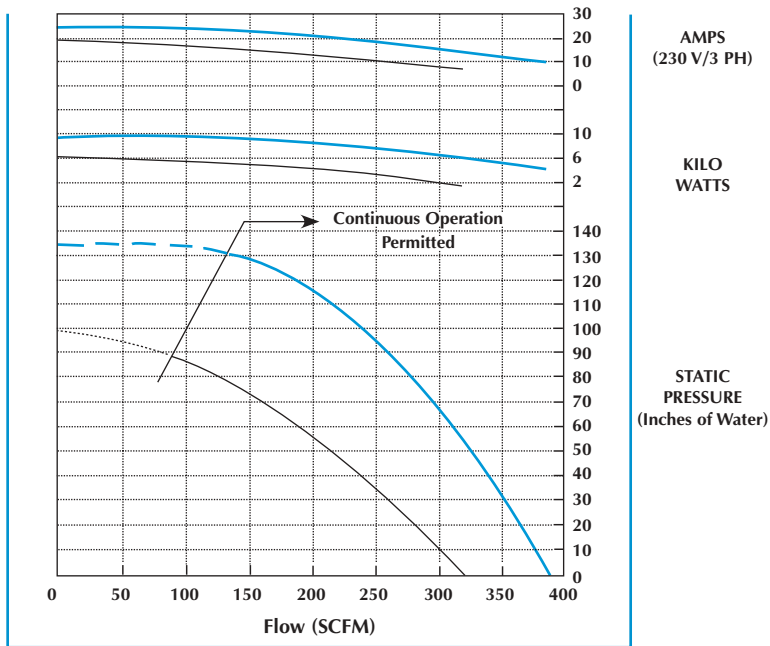


**NOTE:** Maximum allowable time at deadhead is 30 seconds.

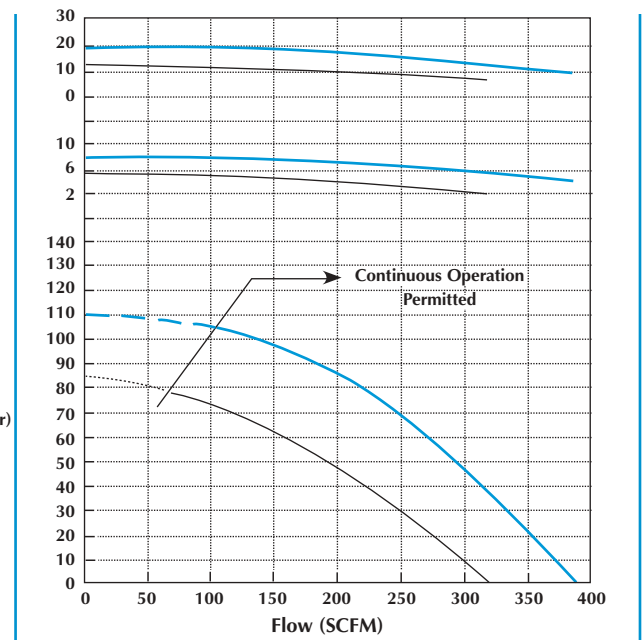


# PERFORMANCE DATA

## PRESSURE

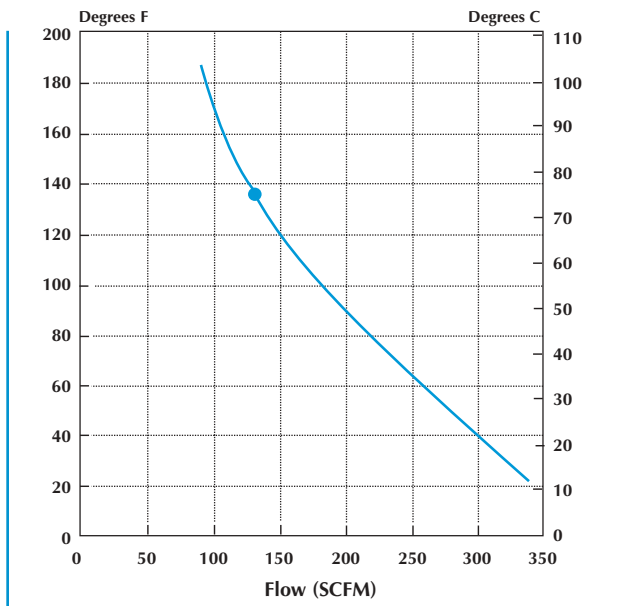


## VACUUM



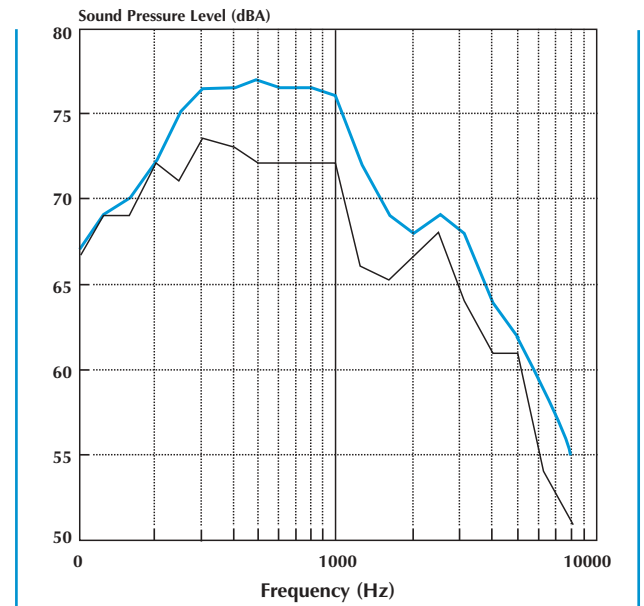
— 60 Hz  
— 50 Hz

## TEMPERATURE RISE



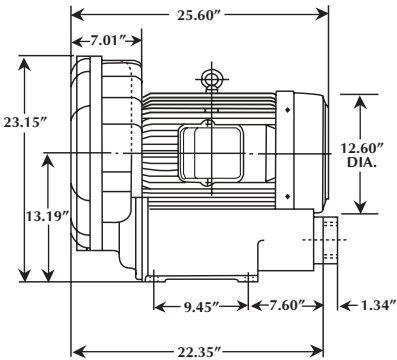
Max. Air Temperature is Value Marked •  
plus 40 Degrees C Ambient Temperature

## SOUND LEVEL

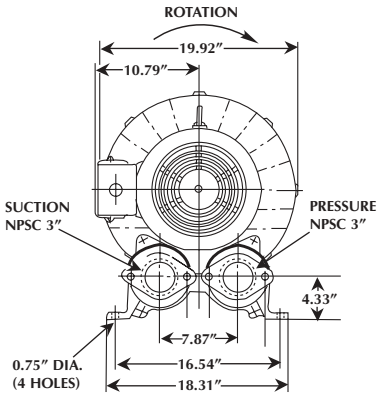


\*Measured at distance of 1.0 meter

# VFC904



3-Phase version shown  
Contact factory for other versions



The VFC904 is a single-stage ring compressor with a maximum pressure of 139 in. H<sub>2</sub>O, a maximum vacuum of 100 in. H<sub>2</sub>O, and a maximum capacity of 570 SCFM. It comes complete with a direct-drive, 20 horsepower, TEFC motor capable of operating on a wide range of voltages and on 50 or 60 Hz. A pilot-duty thermal protector is standard equipment on all 3-phase models. All versions have NEMA class B insulation, and are UL recognized, CSA certified, and CE. 575 Volt units are CSA certified only.

## SPECIFICATIONS

SPECIFICATIONS

		Voltage	Amps (Max. Rated)	Amps (Locked Rotor)	Max. Pressure	Max. Vacuum	Max. Airflow	Min. Airflow	Max. Temp Rise (ΔT)	Weight	
Model No.		Hz	Low Voltage/High Voltage		in. H <sub>2</sub> O	in. H <sub>2</sub> O	SCFM	SCFM	°F(°C)	lbs.(kg)	
3 Phase	VFC904A-7W	60	200-240/400-480	48-44/24-22	290-330/145-165	139	110	570	195	162(90)	450(205)
		50	190-230/380-460	32-28/16-14	310-350/155-175	90	75	500	140	155(85)	
	VFC904A-5W	60	575	16	130	139	110	570	195	162(90)	450(205)

## ACCESSORIES

-For additional accessories: See pages 28-37.

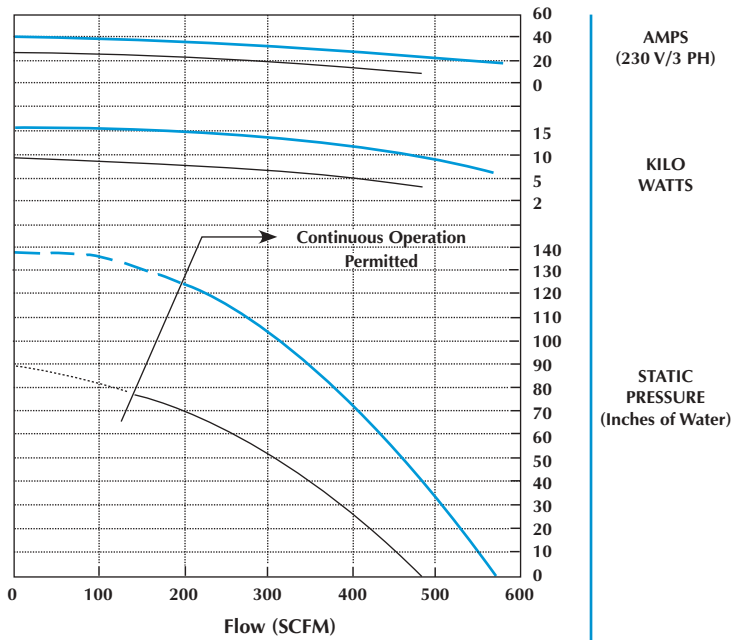
Description	Vacuum Relief Valve	Pressure Relief Valve	Inlet Filter	Inlet Filter Cover	Exhaust Silencer/Muffler
Model No.	VV9	PV9	F-89	C-89	VFY-029A
See Page No.	33	33	28	28	30



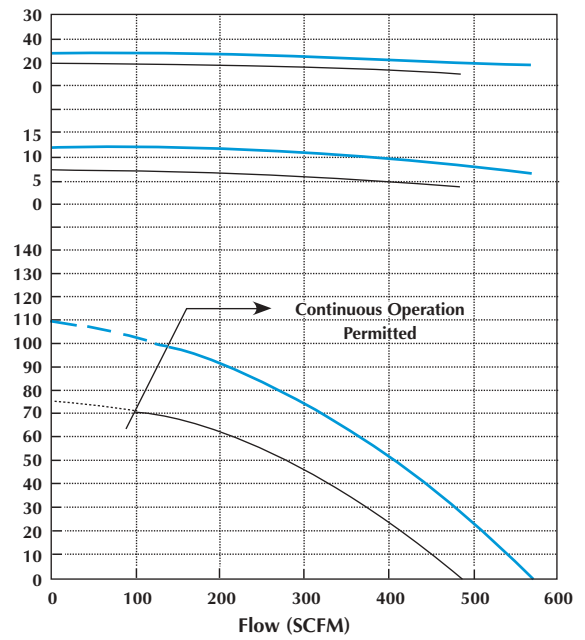
**NOTE:** Maximum allowable time at deadhead is 30 seconds.

# PERFORMANCE DATA

## PRESSURE

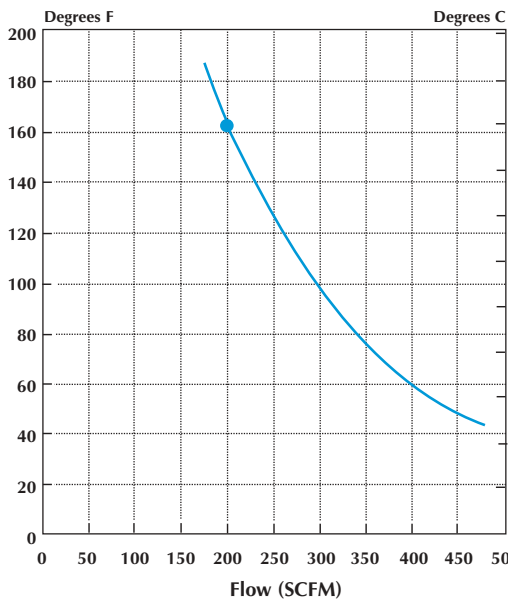


## VACUUM



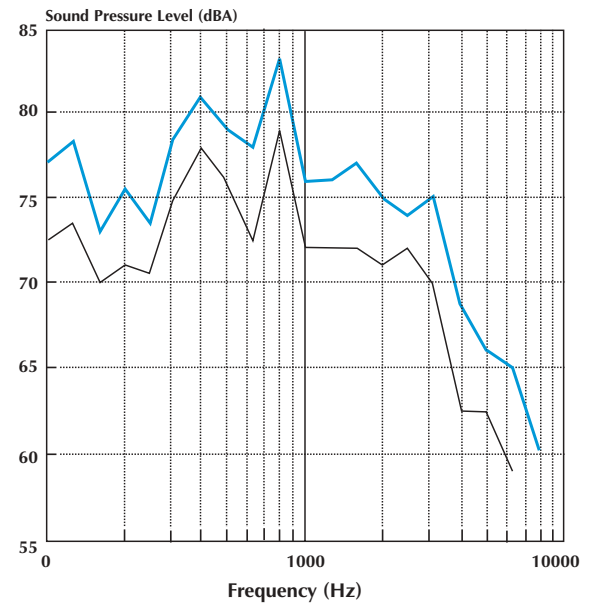
— 60 Hz  
— 50 Hz

## TEMPERATURE RISE



Max. Air Temperature is Value Marked •  
plus 40 Degrees C Ambient Temperature

## SOUND LEVEL

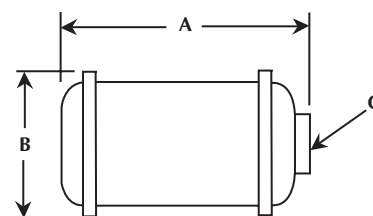


\*Measured at distance of 1.0 meter

# ACCESSORIES

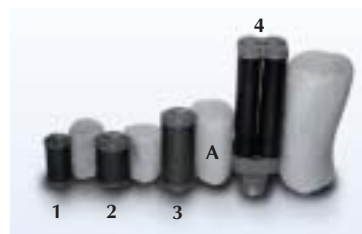
## INLET FILTERS

These filters are designed to protect the Fuji Ring Compressor by filtering the inlet air when the blower is being used for pressure applications. The filter has a perforated metal outer cover and an inner liner wrapped with a fine (.009) mesh screen. The filter is rated for 200 micron filtration.



## INLET FILTER COVERS

These covers are designed to fit over the inlet filter in order to provide better filter protection. They are made of 100% polyester fibers, are approximately 3/4" thick, and are rated 80% efficient at 25 microns.



(1) F-123 & C-123, (2) F-45 & C-45, (3) F-67 & C-67 (4) F-89 & C-89

INLET FILTER					FILTER COVER
Filter Model	For Use With Blower Model:	A Dim. (in.)	B Dim. (in.)	C Dim. (in.)	Filter Cover Model:
F-123	VFC063-VFC300	7 3/8"	3 7/8"	1 1/4" FPT	C-123
F-45	VFC400-VFC504/500	8"	5 1/8"	1 1/2" FPT	C-45
F-67	VFC600-VFC704	14"	5 1/8"	2" FPT	C-67
F-89	VFC804-VFC904	23 1/2"	8 1/4"	3" MPT	C-89

## INLET FILTERS / SILENCERS

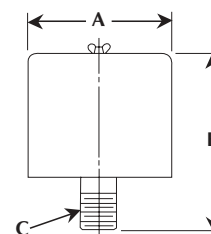
The inlet filter / silencers are designed to protect the Fuji Ring Compressor by filtering the inlet air and quieting the blower when used for pressure applications. The filter has a pleated paper inner filter element rated at 10 microns. A metal outer cover is easily removable when servicing the unit.



## REPLACEMENT ELEMENTS

These are replacement elements for the Inlet Filter / Silencers. They are pleated paper elements rated for 10 microns filtration.

(Other filter elements available upon request. For example: HEPA & others)



INLET/SILENCER FILTER					REPLACEMENT ELEMENT
Filter/Silencer Model	For Use With Blower Model:	A Dim. (in.)	B Dim. (in.)	C Dim. (in.)	Replacement Element Model:
FS-123	VFC063-VFC300	6"	6 1/2"	1 1/4" MPT	FS-123E
FS-45	VFC400-VFC504/500	10"	7 1/4"	1 1/2" MPT	FS-45E
FS-67	VFC600-VFC704	8 5/8"	20 3/8"	2" MPT	FS-67E
FS-89	VFC804-VFC904	12 3/4"	22 1/2"	3" MPT	FS-89E

# ACCESSORIES

## INLINE VACUUM FILTERS

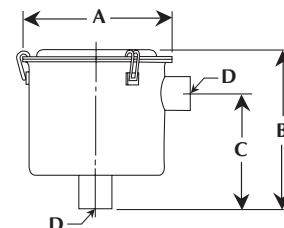
These filters are designed to protect the Fuji Ring Compressor by filtering the inlet air when the blower is being used for vacuum applications. A metal housing with a removable cover, retained by clamps encloses a pleated paper filter element rated for 10 micron filtration.



## REPLACEMENT ELEMENTS

These are replacement elements for the Inline Vacuum Filter. They are pleated paper elements rated for 10 microns filtration.

(Other filter elements available upon request. For example: Hepa, etc.)

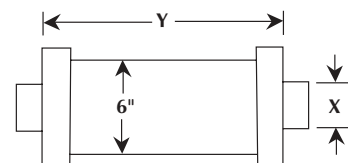


INLINE VACUUM FILTERS						REPLACEMENT ELEMENT
Filter Model	For Use With Blower Model:	A Dim. (in.)	B Dim. (in.)	C Dim. (in.)	D Dim. (in.)	Replacement Element Model:
IVF-01	VFC063-VFC100	5 7/8"	4 3/8"	2 5/8"	1 1/4" FPT	IVF-01E
IVF-23	VFC200-VFC300	7 5/16"	6 1/2"	4 1/2"	1 1/4" FPT	IVF-23E
IVF-45	VFC400-VFC500A/VFC504P	7 5/16"	6 1/2"	4 1/2"	1 1/2" FPT	IVF-45E
IVF-67	VFC600-VFC704	8 3/4"	10 1/4"	5 1/2"	2" FPT	IVF-67E
IVF-89	VFC804-VFC904	14"	27 1/8"	18 1/2"	3" MPT	IVF-89E

# ACCESSORIES

## INLINE FILTER / TRAPS

These Inline Filter Traps are 6" diameter plastic filters with a perforated metal basket and are available in either 12" or 24" lengths. They are used with the Fuji Ring Compressors through model VFC704A for trapping lint, string, paper, etc. 1 1/2" and 2" hose connections are available.

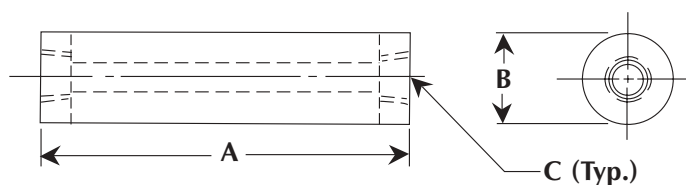


INLINE FILTER TRAPS		
Model No.	X Dim. (in.)	Y Dim. (in.)
TX1215	1 1/2"	12"
TX1220	2"	12"
TX2420	2"	24"



## EXHAUST SILENCERS (MUFFLER)

Although the Fuji Ring Compressors are very quiet during operation, there are times when an additional exhaust silencer may be needed. These silencers allow quieter operation of the blowers in environments where noise levels are critical. The exhaust silencer reduces the noise level by approximately 5 dBA.



EXHAUST SILENCERS (MUFFLERS)				
Exhaust Silencer Model:	For Use With Blower Model:	A Dim. (in.)	B Dim. (in.)	C Dim. (in.)
VFY-021A	VFC063-VFC200	12"	2 1/2"	1" FPT
VFY-023A	VFC300	12"	2 1/2"	1 1/4" FPT
VFY-024A	VFC400-VFC500	12"	3"	1 1/2" FPT
VFY-026A	VFC600-VFC704	15 3/4"	3 1/2"	2" FPT
VFY-028A	VFC804	21"	4 1/2"	2 1/2" FPT
VFY-029A	VFC904	26"	5"	3" FPT

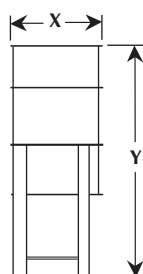
# ACCESSORIES

## INLET FILTERS / RECEIVERS

Certain applications require an inlet filter and a receiver to retain the dust or debris that is collected during operation. These filters include a fine (.009) mesh screen around which is wrapped a perforated metal outer cover. An additional outer cover made of 100% polyester fibers in a layer about 3/4" thick provides filtration rated 80% efficient at 25 microns. These filters are mounted inside of a receiver, available with either a 15 gallon capacity (18 ga. steel) and 1 1/2" hose connections, or a 30 gallon capacity (16 ga. Steel) and 1 1/2" or 2" hose connections. Hose not included.

Options include a fiberglass screen collection bag to facilitate material removal, and receiver support stand with blower mounting surface (pictured).

These filter / receivers are intended for use with medium weight, low volume materials, wood chips, saw dust, light metal chips, and dirt and dust, where a large filter area is not required.



(A) Vacuum flow from receiver to blower; (B) Vacuum flow to receiver; (C) Filter

INLET FILTER/RECEIVERS			
Part No.	Size	X Dim. (in.)	Y Dim. (in.)
R15P1.5	15 Gallon w/ 1 1/2" inlet and outlet	15	26
R15PS1.5	15 Gallon w/ 1 1/2" inlet and outlet, including stand*	15	40
R15P2	15 Gallon w/ 2" inlet and outlet	15	26
R15PS2	15 Gallon w/ 2" inlet and outlet, including stand*	15	40
R30P1.5	30 Gallon w/ 1 1/2" inlet and outlet	19	30
R30PS1.5	30 Gallon w/ 1 1/2" inlet and outlet, including stand*	19	47
R30P2	30 Gallon w/ 2" inlet and outlet	19	30
R30PS2	30 Gallon w/ 2" inlet and outlet, including stand*	19	47

\*Please specify blower model to be used, to ensure correct mounting hole pattern.

## FIBERGLASS SCREEN COLLECTION BAG

Model No.	For Use With:
FB15FG	R15P/PS...
FB30FG	R30P/PS...

# ACCESSORIES

## HIGH VOLUME FILTER / RECEIVERS

Occasionally, an application requires a larger filtration area than the standard Fuji Inlet Filter / Receiver offers. These High Volume Filter / Receivers are constructed with an outer housing made of 16 ga. steel and have an inner liner made of perforated metal, which provides support for a Canton flannel canvas filter bag. An additional, inexpensive, disposable/reusable bag fits inside the flannel bag to provide an easy means to remove the collected material from the receiver. The inlet and outlet connections are for 2" (FR30) and 2 1/2" (FR55) hose.

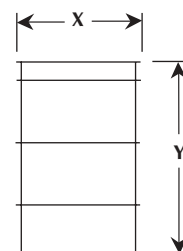
**NOTE:** Swivel Elbow Inlet is optional.

The High Volume Filter / Receivers are designed for use with lightweight materials such as textile lint and dust. It may be used for powders, pellets, etc., but the volume of material collected would be limited due to the weight of the material in the bags. Not intended for use with wet product.



(A) Vacuum flow from receiver to blower; (B) Vacuum flow to receiver; (C) Canton flannel filter bag (1 extra with each model); (D) Disposable / Reusable filter (10 with each model).

HIGH VOLUME FILTER / RECEIVER		
Model No.	X Dim. (in.)	Y Dim. (in.)
FR-30	19"	30"
FR-55	23"	36"



## CANTON FLANNEL FILTER BAGS

Model No.	For Use With:
FR-30FB	FR-30
FR-55FB	FR-55

## DISPOSABLE / REUSABLE FILTER BAGS

Model No.	For Use With:
FR-30DRB	FR-30FB
FR-55DRB	FR-55FB



# ACCESSORIES

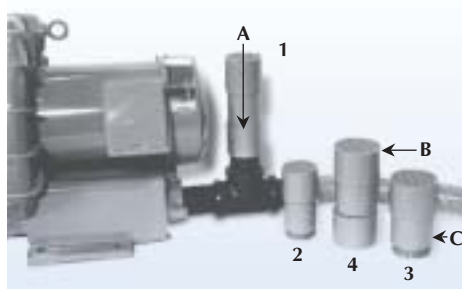
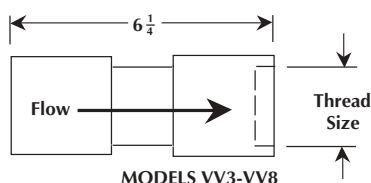
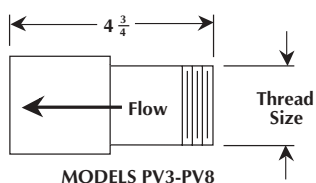
## VACUUM AND PRESSURE RELIEF VALVES

Most Fuji Ring Compressors cannot be operated in a "dead-head" condition. These relief valves are designed to protect the blowers from overheating when operating dead-headed, either under vacuum or pressure. The valves are preset to provide the proper protection for the appropriate model, which is approximately 90% of the dead-head vacuum or pressure level, and is adjustable to a lower pressure or vacuum setting.

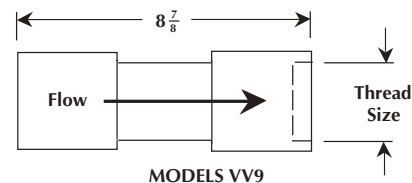
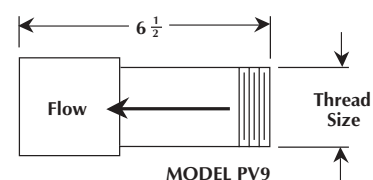
Factory setting at points other than standard can be made if specified on the order. Please allow two extra weeks for delivery. However there are limits for each individual relief valve.

VACUUM RELIEF VALVES			
Model No.	For Use With Blower Model:	Factory Setting ("H <sub>2</sub> O")	Thread Size
VV3	VFC300	39	1 1/2" FPT
VV4	VFC400	42	1 1/2" FPT
VV5	VFC504/500	60	1 1/2" FPT
VV6	VFC600	86	2" FPT
VV7	VFC704	85	2" FPT
VV8	VFC804	100	2" FPT
VV9	VFC904	100	2 1/2" FPT

PRESSURE RELIEF VALVES			
Model No.	For Use With Blower Model:	Factory Setting ("H <sub>2</sub> O")	Thread Size
PV3	VFC300	42	1 1/2" MPT
PV4	VFC400	46	1 1/2" MPT
PV5	VFC504/500	68	1 1/2" MPT
PV6	VFC600	100	2" MPT
PV7	VFC704	98	2" MPT
PV8	VFC804	127	2" MPT
PV9	VFC904	127	2 1/2" MPT



(A) Vacuum flow; (B) Vacuum relief valve; (C) Pressure relief valve; (1) VV5; (2) PV4; (3) PV6; (4) VV8 & VV9



# ACCESSORIES

## VACUUM BOOSTER

The Vacuum Booster allows utilization of the Fuji Ring Compressor in a no-flow, or "dead-head" condition, when used in material handling, vacuum pick-up, and other industrial hold-down applications. The booster permits the necessary flow of cooling air through the blower and also boosts the critical "dead-head" operating pressure level by 10 to 15%. Please specify blower model.

Contact the Fuji applications engineering department for assistance in sizing.



(A) Cooling air flow; (B) Main suction line (may be dead-headed)

VACUUM BOOSTER	
Model No.	FOR USE WITH BLOWER MODEL:
VB45	VFC400-VFC504/500
VB67	VFC600-VFC704

## ASPIRATORS

Some applications require conveying of a product where it is to be transported to a remote point. The use of an aspirator permits lightweight product to be conveyed by vacuum and then blown to a remote point without risk of any product getting to the blower.

The aspirator is ideal for applications such a transporting lightweight materials like paper trim, textile trim, film, dust, etc.

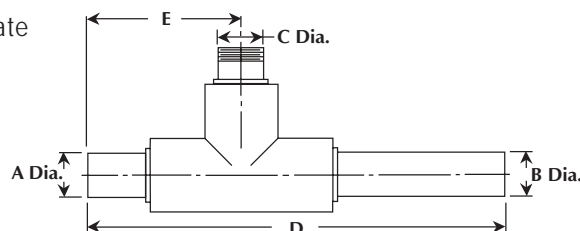


(X) Motive air; (Y) Product pick-up with vacuum flow; (Z) Air exhaust from "X" and material from "Y"

ASPIRATORS						
Model No.	A Dim. (Hose*)	A Dim. (Pipe*)	B Dim. (Hose/Pipe*)	C Dim. (Hose/Pipe*)	D Dim.** (in.)	E Dim.** (in.)
CA100	1 1/4"	1"	1 1/2"	1 1/2"	11"	4"
CA125	1 1/2"	1 1/4"	2"	1 1/2"	14"	5 1/2"
CA150	2"	1 1/2"	2 1/2"	1 1/2"	16"	6"
CA200	2 1/2"	2"	3"	1 1/2", 2"	19"	6"
CA250	2 1/2"	2 1/2"	3", 4"	2", 2 1/2"	24"	8"
CA300	3 1/2"	3"	4"	2 1/2", 3"	27"	9"

\* Hose or Pipe (Specify)

\*\* Dimensions D and E are approximate

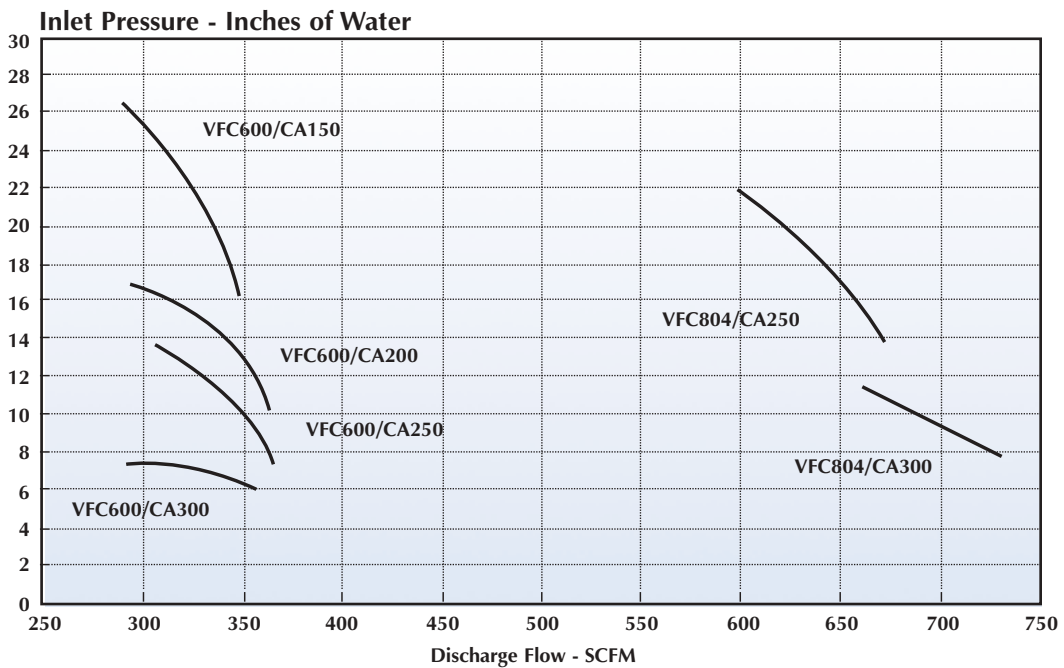
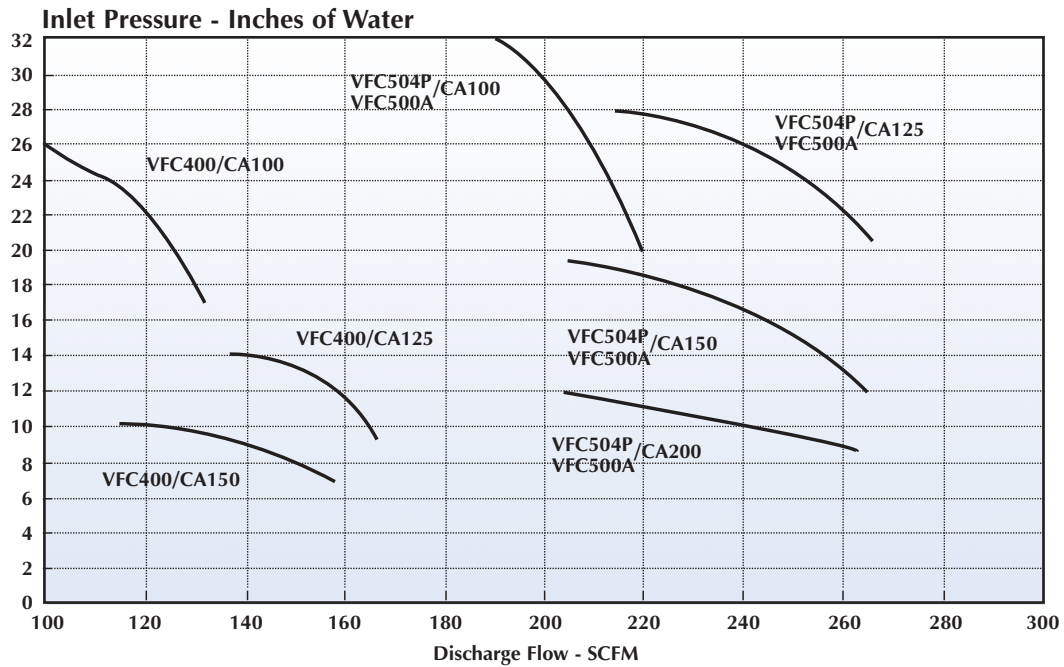


# ACCESSORIES

## BLOWER / ASPIRATOR COMBINATIONS

### Aspirator Inlet Pressure -vs- Discharge Flow

(Tested with 30 ft. hose)



# APPLICATIONS

## AERATION / AGITATION

PRESSURE: Spas • Cement Hoppers • Plating Baths • Compost Decomposition • Fish Pond Oxygenation • Marinas • Sewage Plants • Preventing Pipe Freezing • Aquarium Aeration • Dam Facings • Tank Agitation • Fluidized Beds • Wastewater Treatment • Combustion Air • Air Knife Systems

## MATERIAL HANDLING

VACUUM: Candy Placement • Fruit Peeling • Egg Handling • Labeling Machines • Belt Conveyors • Bag Opening • Material Transferring • Copying Machines • Photo Negative Holding • Paper Slowdown • Paper Feeding • Platemaking • Contact Printing • Air Tables • Tape Tensioners • TapeSpeed Brakes • Overhead Conveyors • Thread and Yarn Tensioners • Non-Magnetic Material Hold-Down or Transfer • Pick and Place Machines

## CONVEYING / ASPIRATION

PRESSURE: Printing Press Powder • Humidifier • Patient Aspiration • Trim Removal • Plastic Pellets • Powders • Lint Collection • Plating Gas Exhaust • Oil Mist Cooling Spray • Grinding Dust • Welding Fumes • Sand Blasting • Paint Spraying • Fuel Atomization • Air Brushes • Grain Transport

VACUUM: Sausage Skin Removal • Fruit Juice Extraction • Trim and Chip Removal • Powder and Grain Transport • Pneumatic Message Systems • Bank Remote Tellers

## BLOWING / CLEANING / DRYING

PRESSURE: Bottle Drying • Low Pressure Dessiccant Dryers • Egg Drying • Water Removal From Hams • Printing Ink Drying • Paper Floating • Paper Separation • Joggers • Paper Feeders • Film Drying • Air Bearings • Rubber Glove Inspection • Pneumatic Massage • Air Mattress • Air Cushion • Plating Blow-Off • Blowing Product From Molds • Chip Removal • Pipe Cleaning • Paper Drying

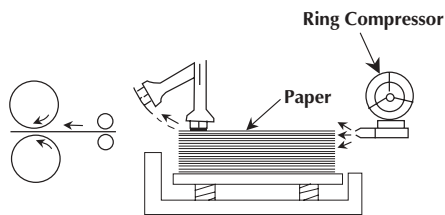
VACUUM: Hole Drill Waster Removal • Trim Removal • Textile Waste and Lint Removal • Yarn Drying • Sewage Dewatering • Sand Drying • Weld Smoke Removal • Clothes Pressing • Clean Room Exhausting • Ventilation of Train Restrooms and Galleys

# APPLICATIONS

## TYPICAL APPLICATIONS

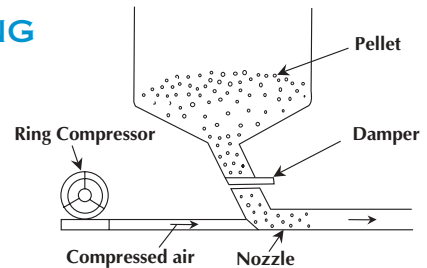
Fuji Ring Compressors are used in many different applications in all phases of industry. They may be used for pressure, vacuum or a combination of both. A few examples are shown below.

**PRINTING** Used in separate, pick up and feed sheets of paper. (Pressure and Vacuum)



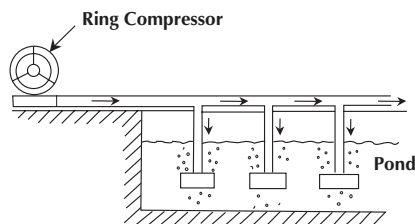
## PNEUMATIC CONVEYING

Used to pneumatically transport pellets, powders, etc. (Pressure and Vacuum)



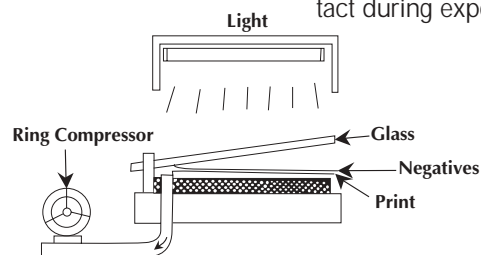
## FISH HATCHERY

Used to add oxygen to fish hatchery ponds. (Pressure)



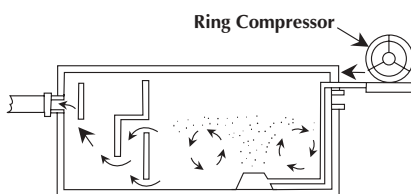
## PLATEMAKING

Used to hold the negative and photography plate in tight contact during exposure (Vacuum)



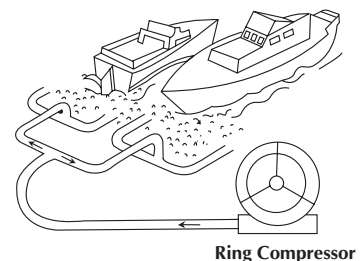
## WATER TREATMENT PLANT

Used to supply air to agitate the sediment in shallow water treatment plants. (Pressure)



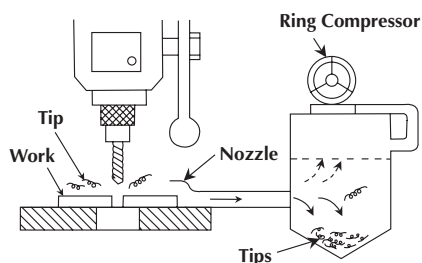
## MARINAS

Bubbles prevent ice formation around boats. (Pressure)



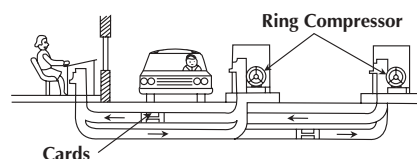
## CHIP REMOVAL

Used to remove metal or plastic chips during machining. (Vacuum)



## BANK REMOTE TELLERS

Used to allow customers to make bank deposits and withdrawals without leaving their cars. (Pressure and Vacuum)



For a more comprehensive listing of application ideas, contact the factory and request publication MEH 735.

# AIR KNIFE

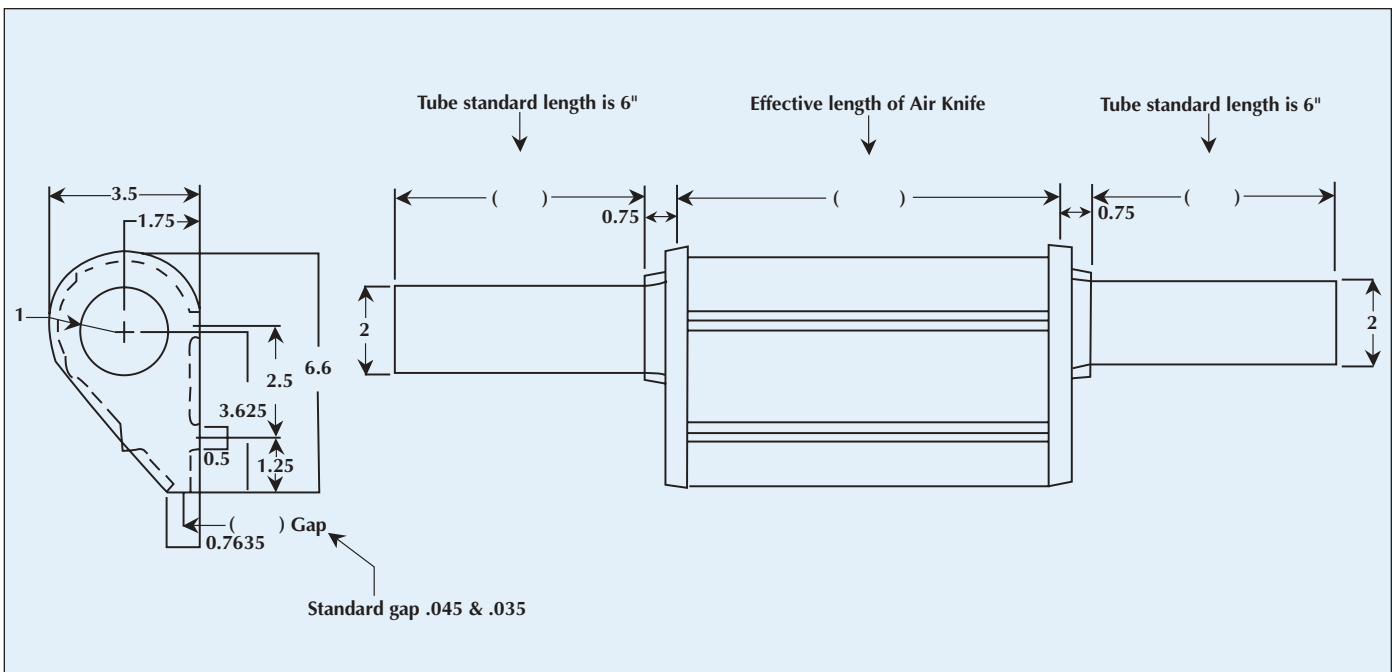
## FUJI ELECTRIC AIR KNIFE



Air Knife Model No.	Air Knife Width	Air Knife Gap
FE-AKE0635	Six (6) Inches	0.035 Inches
FE-AKE0645	Six (6) Inches	0.045 Inches
FE-AKE1235	Twelve (12) Inches	0.035 Inches
FE-AKE1245	Twelve (12) Inches	0.045 Inches
FE-AKE1835	Eighteen (18) Inches	0.035 Inches
FE-AKE1845	Eighteen (18) Inches	0.045 Inches
FE-AKE2035	Twenty (20) Inches	0.035 Inches
FE-AKE2045	Twenty (20) Inches	0.045 Inches
FE-AKE2435	Twenty-Four (24) Inches	0.035 Inches
FE-AKE2445	Twenty-Four (24) Inches	0.045 Inches
FE-AKE3035	Thirty (30) Inches	0.035 Inches
FE-AKE3045	Thirty (30) Inches	0.045 Inches
FE-AKE3635	Thirty-Six (36) Inches	0.035 Inches
FE-AKE3645	Thirty-Six (36) Inches	0.045 Inches
FE-AKE4235	Forty-Two (42) Inches	0.035 Inches
FE-AKE4245	Forty-Two (42) Inches	0.045 Inches
FE-AKE4835	Forty-Eight (48) Inches	0.035 Inches
FE-AKE4845	Forty-Eight (48) Inches	0.045 Inches

The Air Knives are aluminum construction to 48 inches. Larger Air Knives are available upon request. For other sizes and construction contact your Fuji Electric Sales Representative, Distributor and Dealer, or contact the Fuji Electric Sales office at 1-800-421-3854.

# AIR KNIFE



# APPLICATIONS

## SPAS AND HOT TUBS

Most spas and hot tubs require regenerative blowers to provide the pressure and flow needed to agitate the water. Sizing a blower can be a simple process when following the steps below:

1. Determine the number of jets orifices in the spa.
2. Calculate the total area of all the orifices.

$$\text{Total area} = (\text{No. of holes}) \times 3.1416 \times \text{radius}^2$$

3. Select the proper blower from Blower Selection Chart by finding the number and size of the orifices, or jets the spa and reading left to select the proper blower (make sure that the maximum depth for the blower is not exceeded).

## EXAMPLE

Select a blower for a 6' x 6' spa with a depth of three feet, that has (50) 3/16" orifices:

1. Number and size of orifices: 50 x 3/16"
2. Total area of orifices:  $50 \times 3.1416 \times .094^2 = 1.39 \text{ in.}^2$
3. 50 orifices and  $1.39 \text{ in.}^2$  are both greater than the minimum requirement for a VFC400 blower, and the depth of 36" is within the maximum limit for water depth. Therefore, the VFC400 blower should be selected.

ORIFICE AREA CHART	
Orifice Size	Area (in. <sup>2</sup> )
1/8" (0.125)	0.012
5/32" (0.156)	0.019
3/16" (0.188)	0.028
7/32" (0.219)	0.038
1/4" (0.250)	0.049

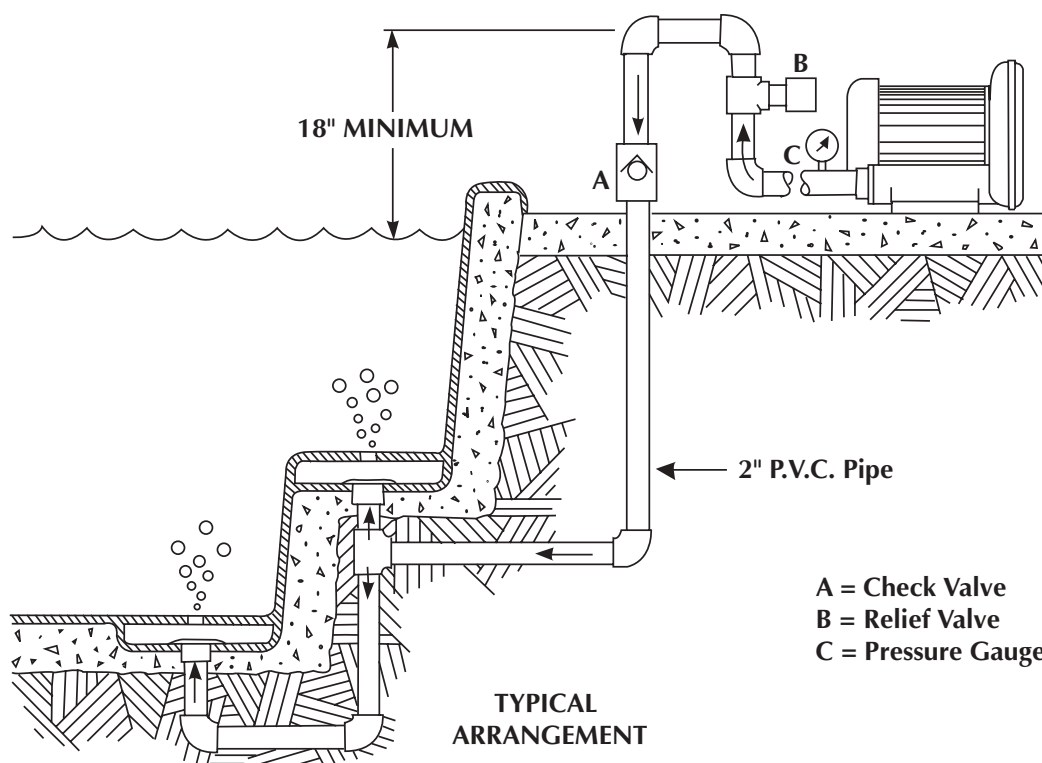
SPA SURFACE AREA CHART (in. <sup>2</sup> )			
Spa Depth	VFC400	Blower Model	
		VFC504/500	VFC600
30"	64	105	140
36"	52	98	128
42"	46	92	117
48"	—	86	111

## NOTES:

1. Two 45° ell's are preferred to one 90° ell.
2. Install a loop at least 18" above the water level.
3. If back-pressure on the blower is excessive, it may be necessary to add more orifices, or to enlarge the existing orifices.
4. A check valve with a very low pressure drop should be placed in an accessible location, close to the spa.
5. Piping to the spa should be 2" or greater. On runs longer than 50', the first 25' should be 2 1/2" minimum. Due to the discharge temperature from some blowers (depending on operating conditions) PVC pipe may not be a satisfactory material.



# APPLICATIONS



**BLOWER SELECTION CHART**

Model	Maximum water depth	Number of jets	Orifice size	Minimum number of orifices	Minimum total hole area (in. <sup>2</sup> )
VFC400P-5T VFC400A-7W/5W	42"	3 - 7	1/8"	98	1.2
			5/32"	63	
			3/16"	43	
			7/32"	32	
			1/4"	25	
VFC504P-2T VFC500A-7W/5W	64"	8 - 13	1/8"	162	2.0
			5/32"	105	
			3/16"	72	
			7/32"	53	
			1/4"	41	
VFC600A-7W VFC600A-5W	84"	12 - 17	1/8"	244	3.0
			5/32"	157	
			3/16"	109	
			7/32"	80	
			1/4"	61	

\*Fewer orifices could cause excessive back-pressure on the blower. Use of a pressure relief valve is recommended.

# APPLICATIONS

## TANK AGITATION

Fuji Ring Compressors are used in applications requiring agitation of fluids such as in plating tanks, rinsing tanks and cleaning tanks. They offer advantages of clean, oil-free air that does not deliver any contaminants to foul or spoil the fluid; low noise level that meets OSHA requirements without costly noise reduction equipment required by positive displacement Roots-type blowers; very low operating cost when compared to air compressors; low purchase cost when compared to other types of blowers or compressors; and the dependability of a rotating machine with no wearing, rubbing or sliding components. The only moving part is a non-contacting impeller supported by two high quality ball bearings.

### PLATING TANKS

Fuji blowers produce agitation that helps to renew the cathode films, decrease polarization, and allows for the use of higher current density, which permits higher plating speeds and finer grain deposits.

### CLEANING TANKS

One problem with non-agitated cleaning tanks is that the solvent or solution stagnates. By agitating the solution with a Fuji blower, fresh solution is constantly brought into contact with the part, and dirt particles and dissolves grease are removed.

### PLATING TANKS

The scrubbing action of air agitation minimized the quantity of rinse water needed for rinsing, which reduces the load on water treatment facilities.

## BLOWER SIZING FOR TANK AGITATION

### PRESSURE REQUIREMENTS

$$P = 0.43 D S + 0.75$$

Where: P = Pressure (PSIG)  
D = Depth of Solution (Feet)  
S = Specific Gravity of Solution (see table)

### FLOW REQUIREMENTS

$$Q = AF$$

Where: Q = Flow Rate (SCFM)  
A = Tank Surface Area (ft.<sup>2</sup>)  
F = Agitation Factor (SCFM/ft.<sup>2</sup>, see table)

Agitation Factor and Specific Gravity Table

Solution	Agitation Factor (F) (SCFM/ft. <sup>2</sup> )	Specific Gravity (D)
Al Plating	1.0 - 1.8	1.2
Cu Plating	1.0 - 1.5	1.2
Ni Plating	1.2 - 2.0	1.2
Cleaning	1.0 - 1.5	1.1
Rinsing	0.5 - 1.5	1.0

# APPLICATIONS

## EXAMPLE 1

2 copper plating tanks are to be agitated. Tank dimensions are 3'w x 6'l x 4'h with a solution depth of 3.5 feet.

Step 1: Determine the pressure.

$$P = 0.43 \times 3.5 \times 1.2 + 0.75 = 2.6 \text{ PSIG}$$

Step 2: Determine the flow.

$$Q = 2 \text{ tanks} \times 3 \times 6 \times 1.5 = 54.0 \text{ SCFM}$$

Step 3: From the Blower Selection Chart below, read down from 2.5 PSIG to the flow that meets or exceeds 54.0 SCFM, then read left to the proper Fuji blower. In this case, Fuji model VFC504P/ VFC500A will provide 60 SCFM.

Note: Use of pressure relief valve or vent valve installed in a "T" to vent excessive air is recommended. This permits cooler operation of the blower, consumes less power and extends life.

## BLOWER SELECTION CHART

Model:	Pressure PSIG (in. H <sub>2</sub> O)							
	1 (27.7)	1.5 (41.5)	2.0 (55.4)	2.5 (69.2)	3.0 (83.1)	3.5 (96.9)	4.0 (110.8)	4.5 (124.6)
VFC200	20							
VFC300	35	22						
VFC400	70	45				SCFM		
VFC504/500	125	100	85	60				
VFC600	175	160	140	125	100	80		
VFC704	230	205	185	165	130	100		
VFC804	360	340	320	290	275	250	210	150
VFC904	515	470	435	390	350	310	260	185

## TANK VENTILATION

Many cleaning, plating and rinsing tanks emit toxic fumes that must be removed. Fuji blowers are used to provide air flow across the surface of the tank to transport the fumes to an exhaust system.

## BLOWER SIZING FOR TANK VENTILATION

The typical requirement for ventilation systems is:

**Air Flow = 1 SCFM @ 1 PSIG for each Foot of Tank Length**

Orifices should be sized to provide an area equal to that of a 1/8" orifice, or 0.012 in.<sup>2</sup>, per foot of pipe.

## EXAMPLE 2

Using the (2) 3' x 6' long tanks in Example 2, the airflow requirement will be: 2 x 6 x 1 = 12 SCFM @ 1 PSIG. Referring to the Blower Selection Chart on page 45 at 1 PSIG, a VFC200 will provide 20 SCFM.

## CAUTION

*When the blower provides more airflow than required, it should not be throttled. There may be a possibility of damaging the blower due to excessive pressure or insufficient airflow to cool it.*

# ENGINEERING

## AIR FLOW THROUGH AN ORIFICE

Since many applications involve air flow through an orifice, the following table may be used to determine the amount of SCFM that passes through orifices at specific pressure differences.

## BLOWER SELECTION CHART

Orifice Size	Area (in. <sup>2</sup> )	Pressure Difference (inches Hg)												
		0.1	0.2	0.5	1	2	3	4	5	6	7	8	9	10
3/64	.0017	0.039	0.059	0.088	0.115	0.181	0.22	0.246	0.27	0.291	0.312	0.329	0.344	0.352
1/16	.003	0.07	0.10	0.154	0.212	0.321	0.386	0.439	0.483	0.523	0.559	0.591	0.615	0.633
3/32	.007	0.15	0.215	0.335	0.483	0.718	0.881	1.013	1.116	1.199	1.263	1.326	1.377	1.411
1/8	.012	0.28	0.42	0.62	0.87	1.32	1.60	1.84	2.04	2.18	2.3	2.39	2.48	2.55
5/32	.019	0.44	0.65	0.99	1.35	2	2.47	2.81	3.1	3.31	3.5	3.66	3.81	3.93
3/16	.028	0.6	0.9	1.35	1.88	2.85	3.51	3.98	4.37	4.68	4.94	5.16	5.35	5.56
7/32	.038	.843	1.25	1.89	2.62	3.73	4.59	5.28	5.87	6.31	6.66	7	7.27	7.52
1/4	.049	1.09	1.62	2.44	3.38	4.76	5.89	6.8	7.54	8.15	8.66	9.05	9.40	9.72
9/32	.062	1.35	2.02	3.04	4.16	5.97	7.29	8.32	9.24	10	10.72	11.2	11.74	12.11
5/16	.077	1.64	2.44	3.68	5.12	7.28	8.73	9.96	11.07	11.99	12.79	13.48	14.05	14.64
3/8	.11	2.34	3.48	5.25	6.86	10.17	12.59	14.46	16.07	17.26	18.30	19.19	20.2	20.9
7/16	.15	3.22	4.79	7.23	9.95	14.55	17.54	19.92	22.1	23.8	25.3	26.7	27.7	28.8
1/2	.196	4.21	6.26	9.45	13.04	19.03	23.3	26.4	28.9	30.9	32.8	34.6	36.2	37.6
9/16	.249	5.46	8.11	12.25	17.59	25.0	30.3	34.4	37.7	40.5	43.1	45.2	47.1	48.7
5/8	.307	7.28	10.82	16.33	22.6	31.8	39.4	45.5	50.4	54.5	57.9	60.5	62.9	65
11/16	.371	9.076	13.48	20.4	28.2	39.7	49.1	56.7	62.8	67.9	72.1	75.4	78.4	81
3/4	.442	10.36	15.4	23.2	32.2	45.3	56.1	64.7	71.7	77.6	82.4	86.1	89.5	92.5
13/16	.518	12.33	18.31	27.6	38.3	53.9	66.7	76.9	85.3	92.3	98	102.4	106.4	110
7/8	.601	14.45	21.5	32.4	44.9	63.2	78.2	90.2	100	108.2	114.9	120.1	124.8	129
15/16	.69	16.14	24	36.2	50.1	70.5	87.3	100.7	111.7	120.8	128.2	134	139.3	144
1	.785	19.27	28.6	43.2	59.9	84.2	104.3	120.3	133.4	144.3	153.2	160.1	166.4	172
1 1/4	1.23	30.3	44.9	67.9	94	132.2	163.7	188.9	209	227	240	251	261	270
1 1/2	1.77	44.8	66.6	100.5	139.2	195.8	242	280	310	336	356	372	387	400
1 3/4	2.41	60.5	89.9	135.7	187.9	264	327	378	419	453	481	502	522	540
2	3.14	81.8	121.5	183.4	254	357	443	511	566	612	650	679	706	730
2 1/4	3.98	100.8	150	226	313	441	546	630	698	755	802	838	871	900
2 1/2	4.91	123.3	183.1	276	382	538	667	769	853	923	980	1024	1064	1110
2 3/4	5.94	149	221	334	462	651	806	930.5	1031	1115	1184	1238	1287	1330
3	7.07	175.4	260	393	545	766	949	1095	1214	1313	1394	1457	1514	1565

SCFM with orifice flow coefficient = 0.60

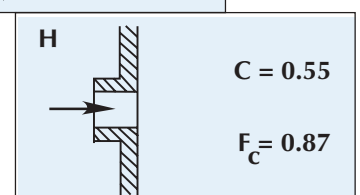
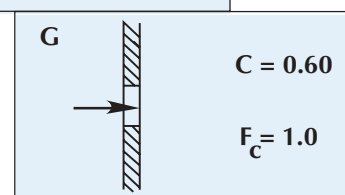
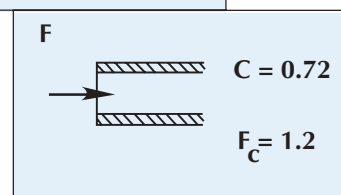
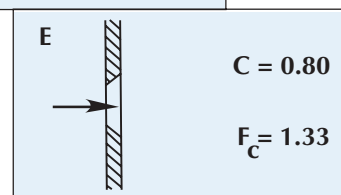
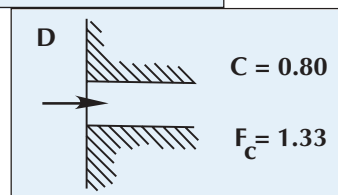
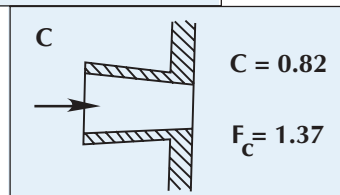
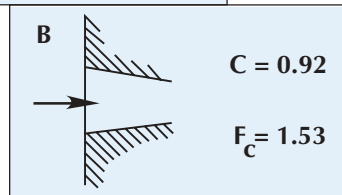
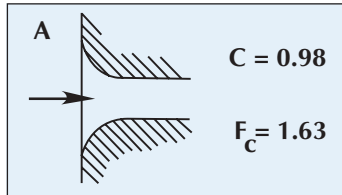
## FLOW COEFFICIENTS FOR ORIFICES

### EXAMPLE 1

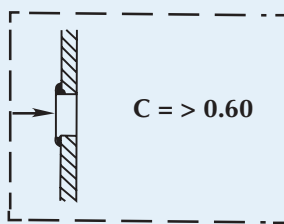
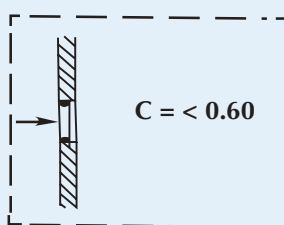
A customer is using a 1/8" dia. orifice with a well-rounded entrance similar to Ⓐ and will operate with a pressure difference of 8" Hg.

Find the maximum flow that will pass through the orifice:

1. From the chart on page 44, the flow through a 1/8 orifice at 8" hg is 2.39 SCFM.
2. Apply the correction factor,  $F_c$ , to the SCFM flow:  
 $1.63 \times 2.39 = 3.9 \text{ SCFM}$



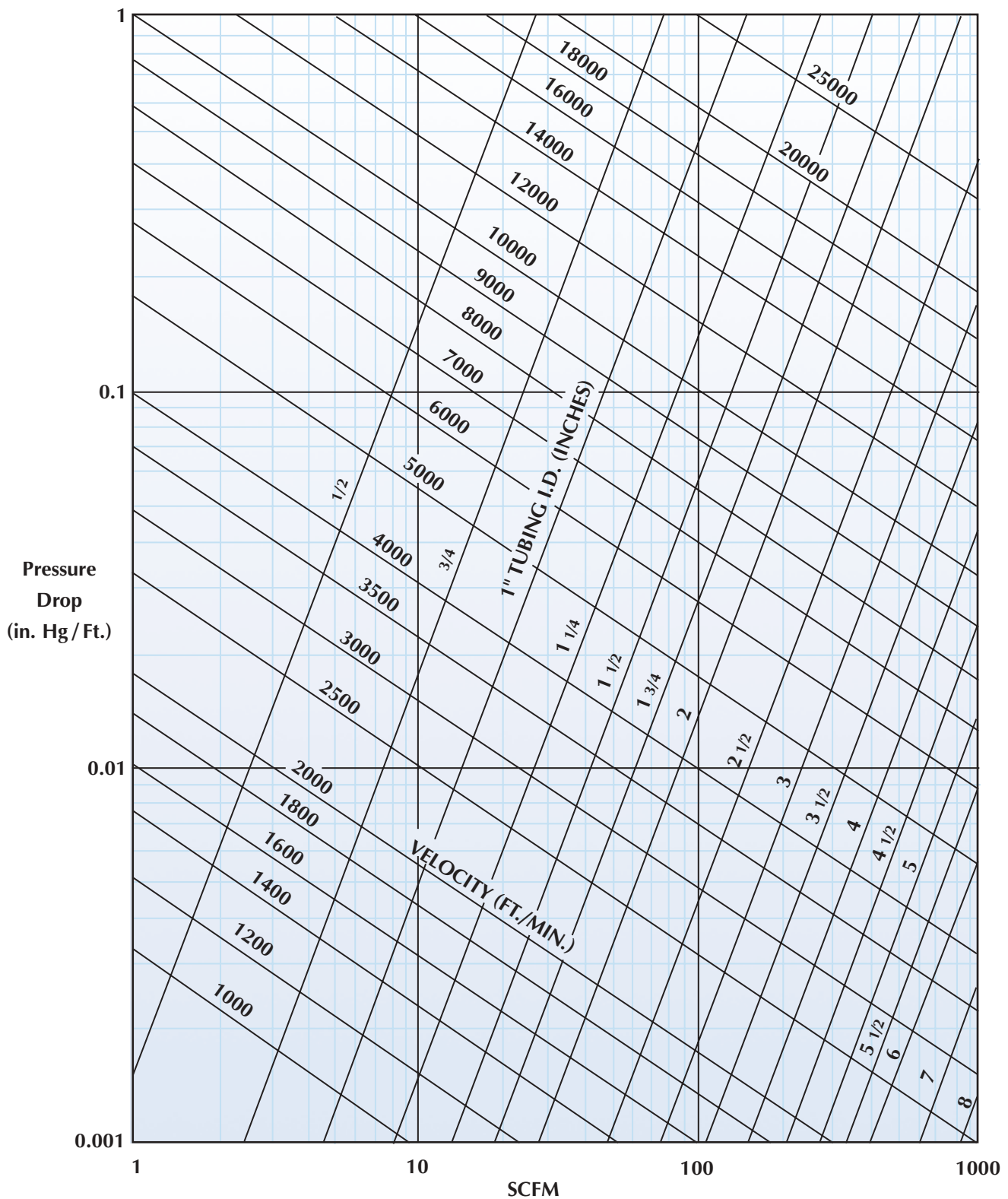
$C$  = Flow Coefficient  
 $F_c$  = Correction Factor



Effect of Dirt and Burrs on Flow Coefficients

# ENGINEERING

## PRESSURE DROP OF AIR PER FOOT OF TUBING



Read **up** from SCFM to the lines indicating tubing size, then **left** to read pressure drop.

## ALTITUDE -VS- BAROMETRIC PRESSURE

Altitude (Feet)	Barometric Pressure (in. Hg)	Altitude (Feet)	Barometric Pressure (in. Hg)	Altitude (Feet)	Barometric Pressure (in. Hg)
0	29.92	1800	28.02	4200	25.65
100	29.81	1900	27.92	4400	25.46
200	29.70	2000	27.82	4600	25.27
300	29.60	2100	27.72	4800	25.08
400	29.49	2200	27.62	5000	24.90
500	29.38	2300	27.52	5200	24.71
600	29.28	2400	27.42	5400	24.52
700	29.17	2500	27.32	5600	24.34
800	29.07	2600	27.21	5800	24.16
900	28.96	2700	27.11	6000	23.98
1000	28.86	2800	27.01	6500	23.53
1100	28.75	2900	26.91	7000	23.09
1200	28.65	3000	26.82	7500	22.65
1300	28.54	3200	26.62	8000	22.22
1400	28.44	3400	26.42	8500	21.80
1500	28.33	3600	26.23	9000	21.39
1600	28.23	3800	26.03	9500	20.98
1700	28.13	4000	25.84	10000	20.58

A blower is required to produce 100 SCFM at 3.5 PSI (97" H<sub>2</sub>O) at an altitude of 4000 feet. At sea level the correct blower would be a VFC704A. Which is the correct blower at the 4000 foot altitude?

Determine the equivalent sea level pressure:

$$PSI_{SL} = P_O \times \frac{29.92}{P_B}$$

Where  $PSI_{SL}$  = Sea level reference pressure (PSI)  
 $P_O$  = Operating pressure at altitude (PSI)  
 $P_B$  = Barometric pressure at altitude (in.Hg)

$$PSI_{SL} = 3.5 \times \frac{29.92}{25.84} = 4.05 \text{ PSI (112" H}_2\text{O)}$$

Determine the flow required at altitude:

$$Q_{SL} = Q_O \times \frac{29.92}{P_B}$$

Where  $Q_{SL}$  = Sea level airflow (SCFM)  
 $Q_O$  = Airflow at altitude (SCFM)  
 $P_B$  = Barometric pressure at altitude (in.Hg)

$$Q_{SL} = 100 \times \frac{29.92}{25.84} = 115.8 \text{ SCFM}$$

At 112" H<sub>2</sub>O, the VFC704A blower only produces about 40 SCFM and would operate in the intermittent operation region of the performance curve. Checking the VFC804A blower performance data on page 25, it produces about 210 SCFM at 112" H<sub>2</sub>O—more than the required airflow of 115.8 SCFM—and can operate continuously. The correct blower, therefore, is a model **VFC804A**.

# ENGINEERING

## TEMPERATURE CONVERSION CHART

$^{\circ}\text{F} = 9/5 (^{\circ}\text{C}+32)$   
 $^{\circ}\text{C} = 5/9 (^{\circ}\text{F}-32)$   
Rankin (R) =  $^{\circ}\text{F}+460$   
Kelvin (K) =  $^{\circ}\text{C}+273$

$^{\circ}\text{C}$	TEMP.	$^{\circ}\text{F}$	$^{\circ}\text{C}$	TEMP.	$^{\circ}\text{F}$	$^{\circ}\text{C}$	TEMP.	$^{\circ}\text{F}$
-34.4	-30	-22	15.6	60	140.0	110	230	446
-28.9	-20	-4	16.7	62	143.6	116	240	464
-23.3	-10	14	17.8	64	147.2	121	250	482
-17.8	0	32	18.9	66	150.8	127	260	500
-16.7	2	35.6	20.0	68	154.4	132	270	518
-15.6	4	39.2	21.1	70	158.0	138	280	536
-14.4	6	42.8	22.2	72	161.6	143	290	554
-13.3	8	46.4	23.3	74	165.2	149	300	572
-12.2	10	50.0	24.4	76	168.8	154	310	590
-11.1	12	53.6	25.6	78	172.4	160	320	608
-10.0	14	57.2	26.7	80	176.0	166	330	626
-8.9	16	60.8	27.8	82	179.6	171	340	644
-7.8	18	64.4	28.9	84	183.2	177	350	662
-6.7	20	68.0	30.0	86	186.8	182	360	680
-5.6	22	71.6	31.1	88	190.4	188	370	698
-4.4	24	75.2	32.2	90	194.0	193	380	716
-3.3	26	78.8	33.3	92	197.6	199	390	734
-2.2	28	82.4	34.4	94	201.2	204	400	752
-1.1	30	86.0	35.6	96	204.8	210	410	770
0	32	89.6	36.7	98	208.4	216	420	788
1.1	34	93.2	37.8	100	212.0	221	430	806
2.2	36	96.8	43	110	230	227	440	824
3.3	38	100.4	49	120	248	232	450	842
4.4	40	104.0	54	130	266	238	460	860
5.6	42	107.6	60	140	284	243	470	878
6.7	44	111.2	66	150	302	249	480	896
7.8	46	114.8	71	160	320	254	490	914
8.9	48	118.4	77	170	338	260	500	932
10.0	50	122.0	82	180	356	266	510	950
11.1	52	125.6	88	190	374	271	520	968
12.2	54	129.2	93	200	392	277	530	986
13.3	56	132.8	99	210	410	282	540	1004
14.4	58	136.4	104	220	428	288	550	1022



## CONVERSION CHARTS

PRESSURE CONVERSION					
PSI	In. H <sub>2</sub> O	In. Hg	mm H <sub>2</sub> O	mm Hg	ATM
1	27.73	2.306	704.49	51.71	0.06804
0.03605	1	0.0734	25.4	1.8627	0.00245
0.49116	13.623	1	346.02	25.4	0.03342
0.00142	0.03937	0.00289	1	0.07341	0.0000966
0.01934	0.53632	0.03937	13.623	1	0.001316
14.696	407.61	29.921	10353	760	1

FLOW CONVERSION			
CFM	L / SEC.	M <sup>3</sup> /MIN.	M <sup>3</sup> /HR.
1	0.47195	0.02832	1.6990
2.1189	1	0.06	3.6
35.314	16.666	1	60
0.58861	0.27778	0.01667	1

VELOCITY				
FT. / SEC.	FT. / MIN.	CM. / SEC.	METER / SEC.	METER. / MIN.
1	60	30.48	0.3048	18.29
0.01667	1	0.5080	0.005080	0.3048
0.03281	1.9685	1	0.01	0.600
3.281	196.85	100	1	60
0.0547	3.281	1.667	0.0167	1

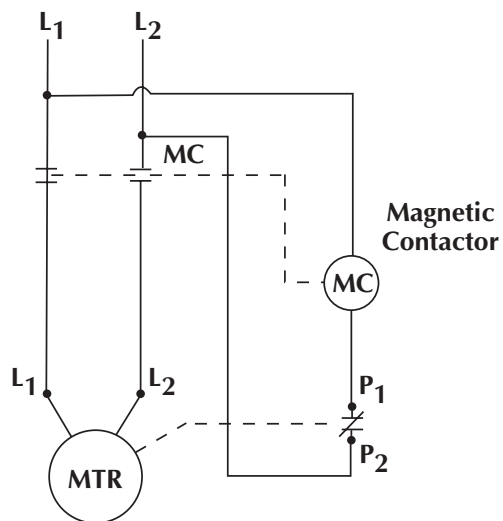
LENGTH				
FEET	INCHES	METERS	CENTIMETERS	MILLIMETERS
1	12	0.3048	30.48	304.8
0.0833	1	0.0254	2.54	25.4
3.281	39.37	1	100	1000
0.03281	0.3937	0.01	1	10
0.003281	0.03937	0.001	0.1	1

Instructions: Read down from the known factor to "1", then across to the desired conversion factor.

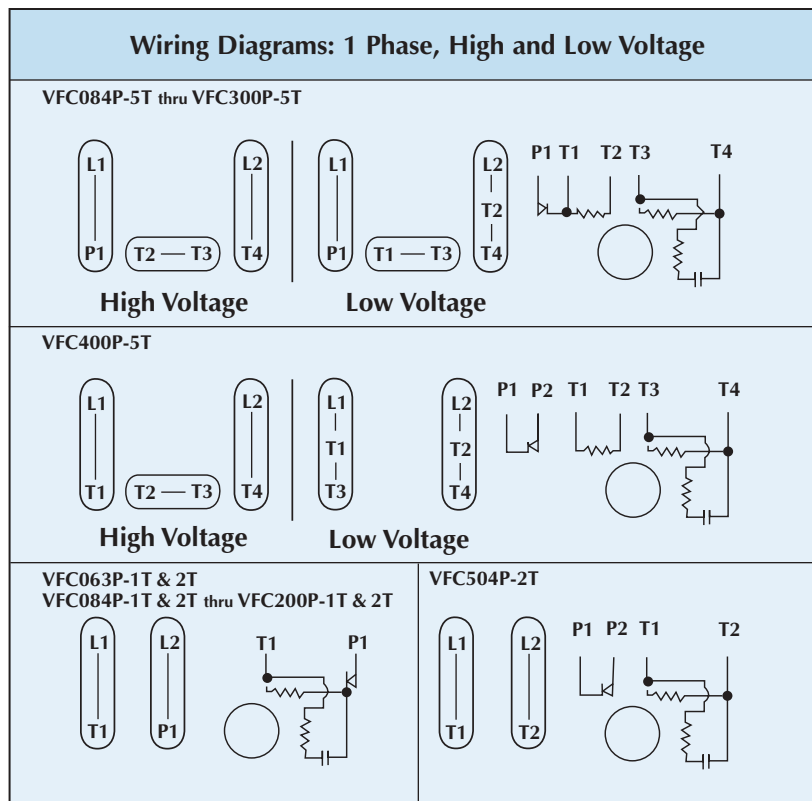
Example: Pressure – 1 in. H<sub>2</sub>O = 0.0734 in. Hg.

# ELECTRICAL

## 1 PHASE WIRING DIAGRAMS



Motor Control Wiring Diagram  
for VFC400P-5T and VFC504P-2T

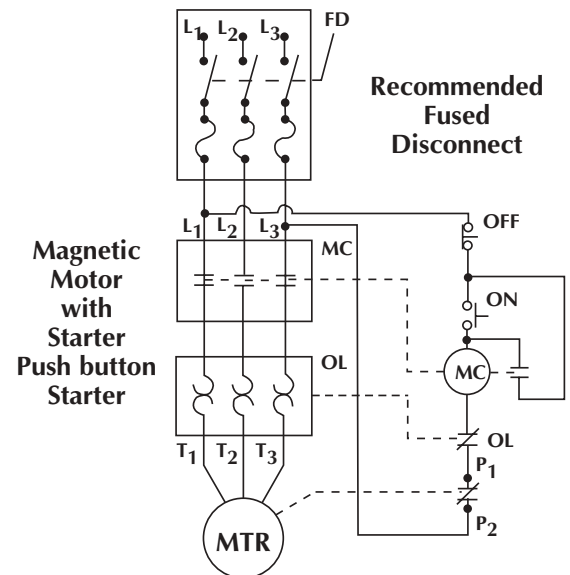
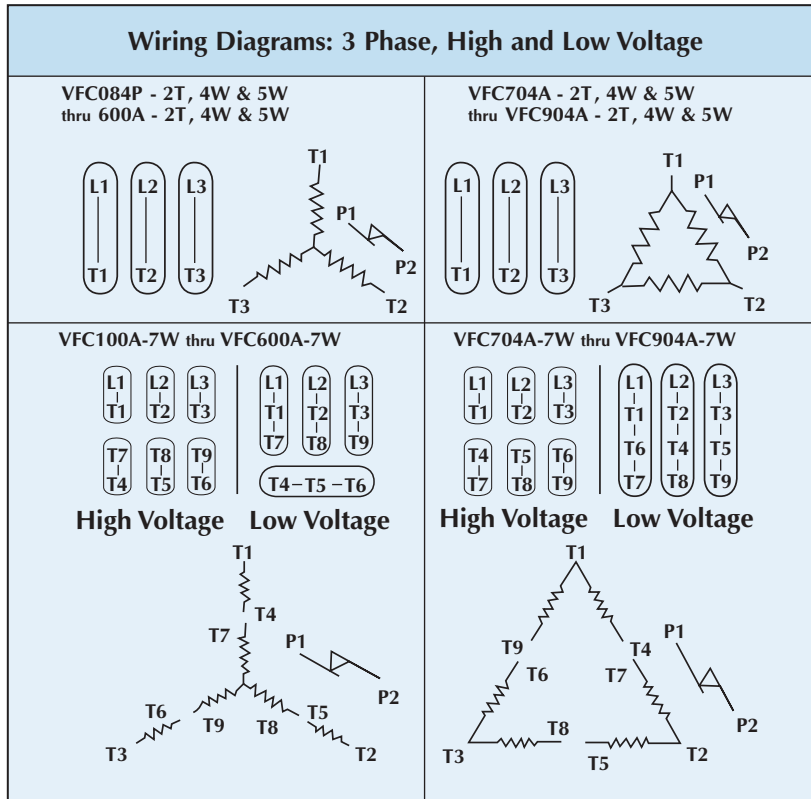


## OPERATING VOLTAGE

	NAMEPLATE VOLTAGE	NOMINAL OPERATING VOLTAGE (50 HZ)	NOMINAL OPERATING VOLTAGE (60 HZ)
1 Phase	115 V	110 V	115 V
	230 V	220 V	230 V
3 Phase	200-230 V	190-230 V	200-240 V
	460 V	380-460 V	400-480 V
	575 V	—	550-600 V

**Note:** All wiring must conform to local and national codes.  
Please contact your local electrical contractor.

## 3 PHASE WIRING DIAGRAMS



**Motor Control Wiring Diagram for all  
3 Phase Models for Maximum Protection**

## AUTOMATIC THERMAL PROTECTION

In models VFC063P, VFC084P, VFC100P, VFC200P, and VFC300P the thermal protector is in direct line with the power to the motor windings. If a thermal overload occurs, the thermal switch opens at  $135^{\circ} \pm 5^{\circ}\text{C}$  ( $275^{\circ} \pm 9^{\circ}\text{F}$ ). Power is interrupted to the motor winding; power will be restored when the thermal switch measures  $88^{\circ} \pm 15^{\circ}\text{C}$  ( $190^{\circ} \pm 27^{\circ}\text{F}$ ). The motor will resume full speed.

## PILOT DUTY THERMAL PROTECTION

In models VFC400P and VFC504P, VFC100A – VFC600, VFC084A – VFC904A, the thermal switch must be put in series with the magnetic starter coil (low current circuit). The thermal switch opens at  $135^{\circ} \pm 5^{\circ}\text{C}$  ( $275^{\circ} \pm 9^{\circ}\text{F}$ ) and closes at  $88^{\circ} \pm 15^{\circ}\text{C}$  ( $190^{\circ} \pm 27^{\circ}\text{F}$ ). Magnetic contactors and magnetic starters must be reset manually in most cases. Some electrical circuits may vary. Please contact system electrical drawings or a qualified electrician to trouble shoot the circuit.

# DESIGN CONSIDERATIONS

The successful operation of a Fuji Ring Compressor depends upon following certain guidelines when installing the unit.

## INSTALLATION

The blowers may be used for handling non-corrosive, non-combustible and non-explosive gases as well as air. The gas temperature and ambient temperature should be kept at less than 104°F, and the relative humidity at less than 80%.

The blowers can be installed in most directions. When installing the blower with the motor axis mounted vertically or at an angle, it is important to keep the impeller side downward (motor side upward). The VFC704A, VFC804A and VFC904A should only be installed with the motor axis mounted horizontally for longer life.

Do not install the Ring Compressors on a base that is subject to vibration. The mounting base should be rigid enough to prevent resonance. Rubber feet, pads, or other vibration absorption materials are recommended.

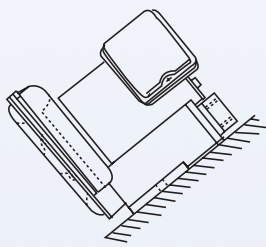
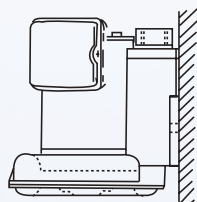
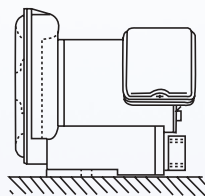
## SOLID PARTICLES

Gases contaminated by solid particles must be filtered before entering the Blower. Fuji offers a complete line of accessories designed to remove all types of contaminants, which include: Inlet filters for both pressure and vacuum, filter traps, and cyclone separators and receivers. These can be used to prevent dust, dirt, lint, threads, and water from entering the blower inlet.

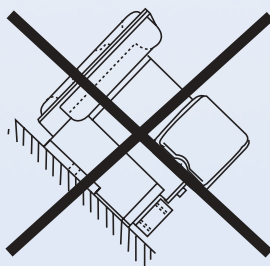
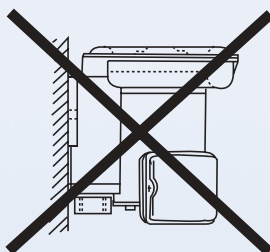
## DIRECTION OF ROTATION

All Fuji Ring Compressors have an arrow located on the blower housing to indicate the proper direction of rotation, and all blowers operate in a counter-clockwise direction when viewed from the

### CORRECT



### INCORRECT



motor side. This can be checked by watching the fan on the motor, or by feeling the airflow entering or exiting the blower inlet and outlet, which are labeled "IN" and "OUT", respectively. All three phase units may have the direction of rotation reversed by switching the two main power leads. All single phase units operate in one direction of rotation only, regardless of wire connections.

When three phase units operate with reversed rotation, a loss of performance will result, and airflow will be reversed. Some applications may benefit from this type of operation; please contact the factory for information.

## TEMPERATURE

The temperature rise of air passing through the blower can be determined from the charts on pages 7 through 27.

## CONTINUOUS OPERATION

When operating Fuji Ring Compressors, the air flow can be throttled between the open-flow (0" H<sub>2</sub>O pressure difference) to a blank-off condition (zero flow). The blank-off duration of the blower must not exceed the maximum allowable time (see chart on page 51). If the blower will be operating in a continuous mode, it requires a minimum amount of air flow, (see chart on page 51). Fuji offers pressure and vacuum relief valves that are set at the correct point to allow proper operation of the blower. When using relief valves, the blower must be rotated in one direction only.

Models VFC600A-7W and smaller must be limited to 10 starts per hour; models VFC704A-7W and larger must be limited to 4-6 starts per hour, for extended life.

# DESIGN CONSIDERATIONS

## OPERATING LIMITS

### 60 Hz Operation

Model	TEMPERATURE		PRESSURE		VACUUM	
	Maximum Outlet Temperature**		Maximum Time at Dead-head (Seconds) <sup>①</sup>	Minimum Airflow (SCFM)	Maximum Time at Dead-head (Seconds) <sup>①</sup>	Minimum Airflow (SCFM)
	°C	°F				
VFC063P	70	158	Cont.	0	Cont.	0
VFC084P/A	70	158	Cont.	0	Cont.	0
VFC100P/A	80	176	600	3.5	600	3.5
VFC200P/A	80	176	240	3.5	240	3.5
VFC300P/A	70	158	120	17*	120	16*
VFC400P/A	105	223	120	3.5*	120	3.2*
VFC504P/500A	80/95	176/ 205	60	45*	60	40*
VFC600A	110	230	60	56*	60	50*
VFC704A	115	241	30	88*	30	70*
VFC804A	115	241	30	135*	30	106*
VFC904A	130	266	30	195*	30	140*

### 50 Hz Operation

Model	TEMPERATURE		PRESSURE		VACUUM	
	Maximum Outlet Temperature**		Maximum Time at Dead-head (Seconds) <sup>①</sup>	Minimum Airflow (SCFM)	Maximum Time at Dead-head (Seconds)	Minimum Airflow (SCFM) <sup>①</sup>
	°C	°F				
VFC063P	70	140	Cont.	0	Cont.	0
VFC084P/A	70	140	Cont.	0	Cont.	0
VFC100P/A	75	169	600	1.75	600	1.7
VFC200P/A	75	169	240	3.5	240	3.5
VFC300P/A	65	151	120	10*	120	9*
VFC400P/A	95	208	120	3.5*	120	3.2*
VFC504P/500A	75/80	169/ 176	60	25*	60	23*
VFC600A	100	212	60	28*	60	24*
VFC704A	100	212	30	63*	30	62*
VFC804A	115	241	30	88*	30	87*
VFC904A	125	259	30	140*	30	139*

\* Use of pressure or vacuum relief valves are recommended. See page 33.

\*\*Max. outlet temp. = max. temp rise + 40°C (104°F) ambient temp.

① Maximum time (seconds) at dead-head starting at ambient temperature.

# NOTES

---